Proposed Expansion of Marrickville Metro Shopping Centre

Preferred Project Report on Transport Aspects

November 2010

Prepared for

AMP Capital Investors

Halcrow

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This report has been issued and amended as follows:

Rev	Description	Date	Prepared by	Approved by
0	First Draft for Client review	01/11/10	PT	BM
1	Second Draft for Client review	02/11/10	PT	BM
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3	Final Issue	10/11/10	PT	BM

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Contents

1 Introduction

This report forms part of a Preferred Project Report (PPR) prepared on behalf of AMP Capital Investors (AMPCI) in respect to the Concept Plan Application under Part 3A of the NSW Environmental Planning and Assessment Act 1979 for the proposed redevelopment of the Marrickville Metro Shopping Centre. **Figure 1** shows the site's location.

This report has been prepared in response to the letter from the Department of Planning (DOP) dated 14 October 2010 requesting that a Preferred Project Report (PPR) be prepared. The letter requests that the proponent respond to the issues raised by the submissions and for the PPR to identify how the issues raised by the submissions including those of the DOP have been addressed and how the PPR minimises the environmental impacts of the proposal.

The Preferred Project includes the following key amendments to the original proposal:

- The adoption of the "alternative proposal" for Smidmore Street as outlined in section 5.6 of the Environmental Assessment Report, meaning that all proposed development within the Smidmore Street road reserve has been deleted from the proposal and the road will remain open to vehicle traffic;
- Removal of the draft VPA from the PPR following Marrickville Council's decision not to grant owner's consent for the inclusion of Smidmore Street in the application;
- Accompanying refinements to the design of the buildings fronting Smidmore Street to address the existing street interface, optimise pedestrian access between the two buildings and maximise street front retail activation and pedestrian amenity;
- A reduction in the gross leasable floor space of the additional development from 21,470sqm to 16,767sqm (a reduction of 22% in floor area);
- A reduction in the number of new car parking spaces from 715 to 528;
- A significant reduction in the new building footprint above the existing shopping centre within the north-east section of the site, including the removal the spiral ramp near the corner of Victoria Road and Murray Street;

SITE LOCATION

MARRICKVILLE METRO PPR

North

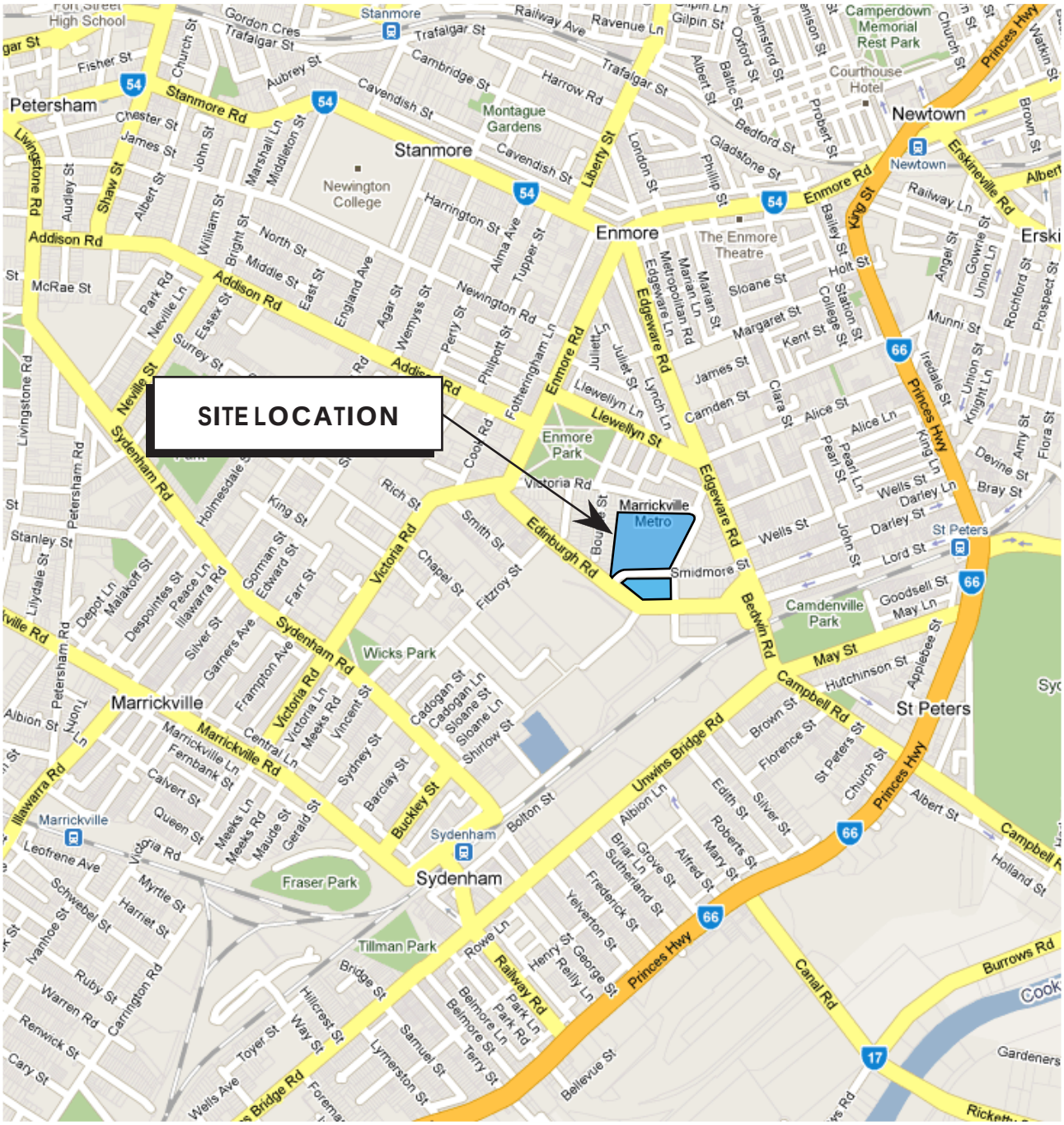

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Figure 1

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Date: 01 November 2010

- Retention of the existing vehicle ramp location within Murray Street and the relocation of the access from Murray Street to the new loading dock 3 further to the south;
- A public domain 'concept vision' for Smidmore Street which will be subject to the further agreement of Marrickville Council; and
- Retention of all existing mature Lemon Scented Gums in Smidmore Street.

This report describes and assesses these changes. It also responds to submissions made to the application by authorities and other parties.

2 Modified Design

2.1 Description

The project involved modifications to the existing centre through the provision of additional retail space and car parking on the roof along with changes to the two existing car park access ramps.

The modification reduces the additional retail space above the existing centre significantly and reduces the additional parking on it to suit. It also involves retention of the two existing car park ramps largely unchanged but would still internalise the currently outward facing loading areas on Murray Street.

With the retention of Smidmore Street as a public street, there would be no retail or car park links across it between the existing site and the new site.

Development on the new site across Smidmore Street would otherwise be modified only slightly to avoid encroachment on the Smidmore Street road reserve.

It is still proposed to develop a new bus terminus on Edinburgh Road adjacent to the new section of site. Plans of the modified proposal are provided in **Appendix A**.

2.2 Parking Provision

It is proposed to provide car parking at the RTA recommended rate of 4.1 spaces per 100m^2 of gross lettable floor area (GLA). Thus for the 39,700m^2 of floor area around 1628 parking spaces are proposed.

2.3 Traffic Generation

The methodology used by the July 2010 TMAP to forecast traffic generation, has been maintained for this PPR. All relevant submissions indicated an agreement with the traffic generation methodology used.

Firstly, surveys of existing traffic flows on the surrounding road network were carried out on the following days:

- Saturday 13 February 2010 between 11.00am – 2.00pm; and
- Thursday 18 February 2010 between 3.30 – 6.30pm.

February is normally a busy month for traffic on Sydney's roads with schools back following the summer holidays and employee annual leave absences reduced between the summer and Easter holidays.

The surveys of traffic arriving at and departing the centre established the following traffic generation:

- Thursday evening – 1,041 veh/hr
- Saturday peak hour – 1,597 veh/hr

By way of comparison RTA traffic generation rates suggest that the following traffic generation rates could have been expected:

- Thursday evening 22,933m^2 @ 5.9 veh.hr/100m^2 = 1,353 veh/hr
- Saturday 22,933m^2 @ 7.5 veh.hr/100m^2 = 1,720 veh/hr

Thus the centre presently generates traffic at about 77% of the RTA rate on a Thursday evening and at about 93% of the RTA rate on a Saturday morning.

The following presents the traffic generation for the latest proposal based on using the trip rates applied by the previous TMAP analysis:

- Thursday evening 39,700m^2 @ 4.6 veh/hr/100m^2 x 0.77 = 1,406 veh/hr
- Saturday 39,700m^2 @ 6.1 veh/hr/100m^2 x 0.93 = 2,252 veh/hr

Therefore, the net traffic increase can be calculated as follows by deducting the existing traffic generation from the forecast future traffic generation:

- Thursday evening 1,406 – 1,041 = 365 veh/hr
- Saturday 2,252 – 1,597 = 655 veh/hr

2.4 Traffic Distribution and Future Traffic Volumes

A number of submissions were made in respect of the application's traffic analysis and in particular regarding the amount of additional traffic that might be expected on Edgeware Road. Because of this, and because the removal of a connection between the two car parks on either side of Smidmore Street would affect the direction of traffic arrivals, the distribution of additional traffic that would be generated by the proposal was reconsidered.

This assessment also has regard to two different effects.

Firstly, consideration was given to the retail market study for the proposal (that was prepared by Pitney Bowes Business Insight, May 2010), which indicated the proportion of increased trade that would be derived from different sections of the expanded centre's trade area. This trade distribution was combined with an assessment of the principal routes that would be used to travel to and from the centre from each direction to make an estimation of the proportions of additional traffic that would be on each main arrival and departure route. This distribution on the principal arrival/departure route network is shown on **Figure 2**.

Secondly, the assessment accounted for the well recognised phenomenon that a new or expanded shopping centre in an established area derives a significant amount of its business from traffic that would otherwise have passed by the centre to shop elsewhere anyway. This occurrence is recognised by the RTA which indicates that it would typically represent 15% of the traffic generation of a centre over 30,000m^2 in floor area.

In the case of Marrickville, this effect would occur mainly on Edinburgh, Enmore and Edgeware Roads through the interception of traffic that presently passes by the centre to travel to/from Broadway and the CBD to shops.

These two traffic effects are reflected in the traffic flow and distribution diagrams that are presented at **Appendix B** of this report. For the Thursday evening peak period, these provide a build up of future traffic generation forecasts as follows:

- Figure B1 shows existing traffic flows for the Thursday evening peak;

PRINCIPAL ARRIVAL/DEPARTURE DISTRUBTION

MARRICKVILLE METRO PPR

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Figure 2

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Date: 20 October 2010

- Figure B2 shows committed local development traffic flows (i.e. additional traffic from other development approved for the area that is unrelated to the subject site proposal);
- Figure B3 shows the development traffic volumes that are expected to be diverted from traffic that already passes the site. This represents a reduction in background traffic;
- Figure B4 shows the trip distribution for development traffic. This indicates traffic that would be added to the road system; and
- Figure B5 shows the nett change in traffic flows resulting from the development.

Figures B6 to B10 in Appendix B provide the corresponding traffic flow diagrams for the Saturday midday peak period.

The sum of the flows shown on Figures B1, B2 and B5 provides the forecasted future traffic flows for the Thursday evening peak; similarly, the sum of the flows on Figures B6, B7 and B10 provides the forecasted future traffic flows for the Saturday midday peak period. These future forecasted traffic flows are presented on **Figures 3** and **4**.

Based on these, **Table 2.1** below compares existing and forecast future traffic flows on streets surrounding the centre. These take into account both the reduced traffic generation of the now smaller expansion and the traffic distribution process explained above.

Table 2.1 indicates that the combined effects of additional traffic generation and of traffic interception would lead to very little change in traffic flows on Edgeware Road. This is consistent with the findings in the July 2010 TMAP. Traffic flows on other roads would generally be comparable to or less than those forecast in the Application report.

The only material change would occur in the immediate vicinity of the centre through the retention of Smidmore Street as a public road. In general traffic flows in this location would be reduced compared to the original proposal due to the smaller size of the expanded centre and because some traffic would use Smidmore Street instead of adjoining streets.

FUTURE YEAR TRAFFIC FLOWS ON SURROUNDING ROAD NETWORK, THURSDAY PM

Marrickville Metro PPR

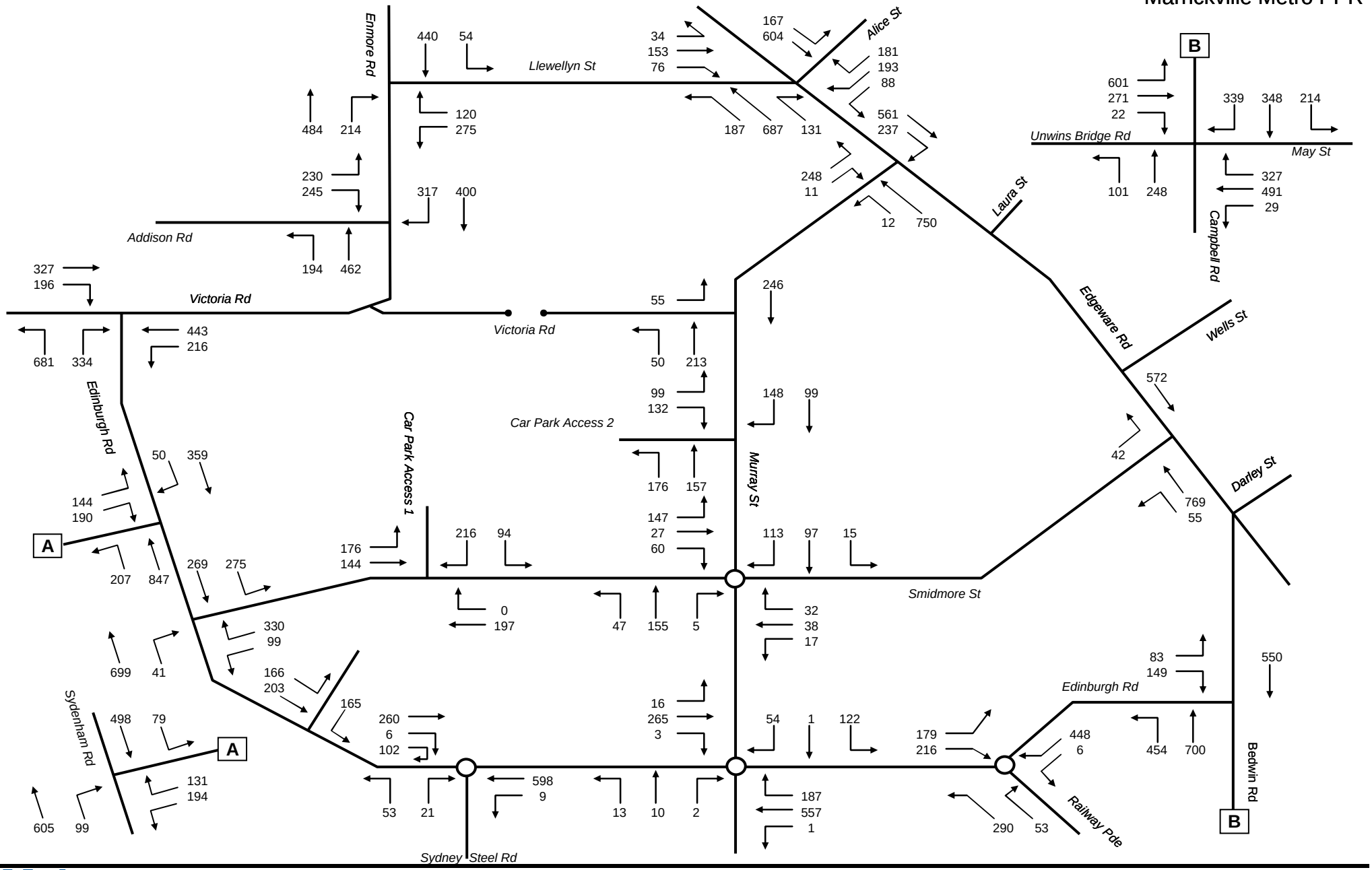

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Figure 3

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FUTURE YEAR TRAFFIC FLOWS ON SURROUNDING ROAD NETWORK, SATURDAY

Marrickville Metro PPR

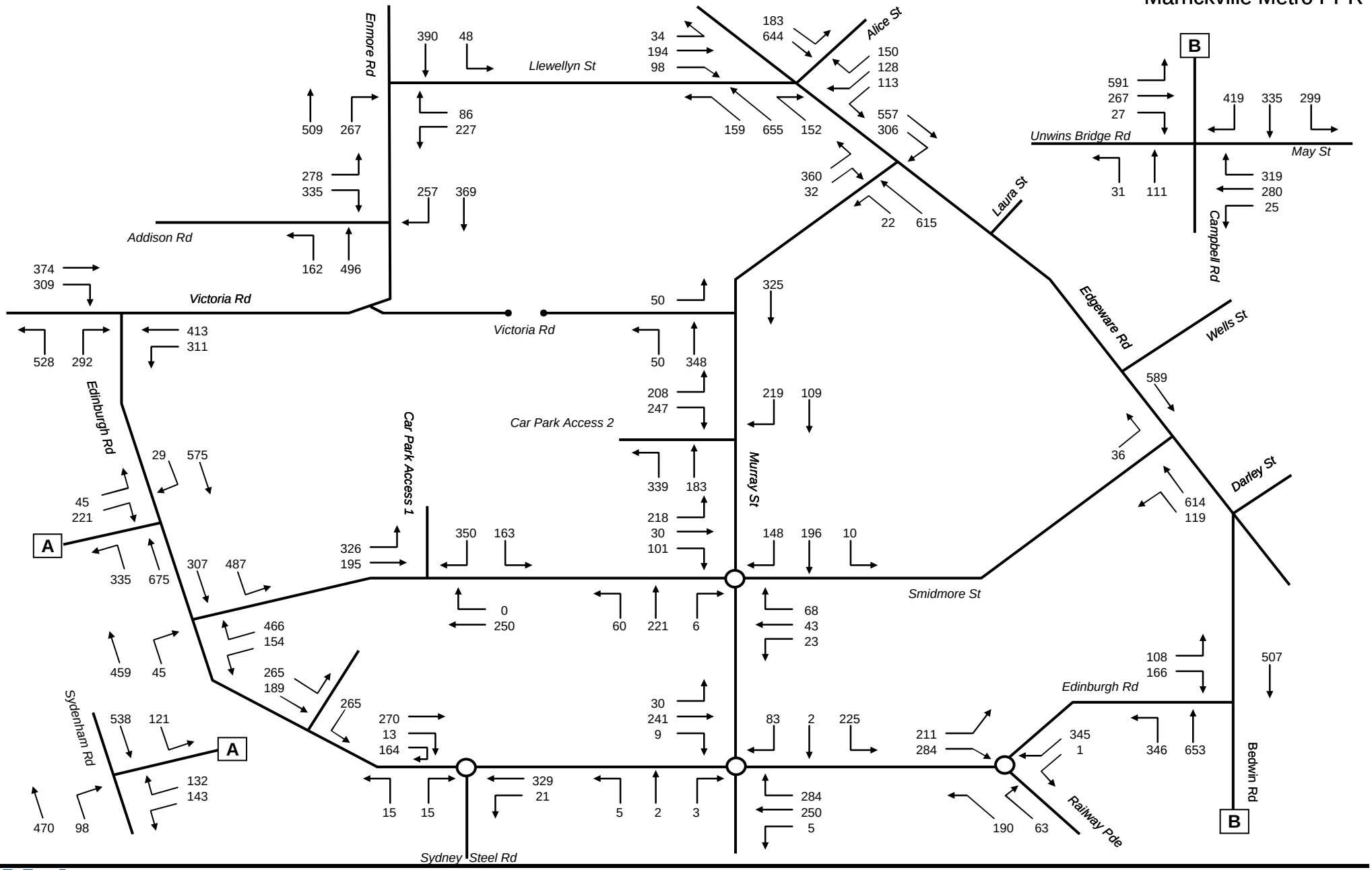

Table 2.1 – Comparison of Existing and Future Two-Way Peak Hour Traffic Volumes (vph)

Link	Location	Thursday PM		Saturday	
		Existing	Future	Existing	Future
Enmore Rd	Between Addison Rd & Llewellyn St	1009	1098	904	1033
Victoria Rd	West of Edinburgh Rd	1162	1311	1116	1376
Edgeware Rd	North of Llewellyn St & Alice St	1669	1673	1647	1666
Edgeware Rd	Between Victoria Rd & Llewellyn St	1764	1785	1784	1830
Edgeware Rd	Between Darley St & Edinburgh Rd	1311	1333	1234	1268
Alice St	East of Edgeware Rd	855	913	852	920
Victoria Rd	Between Murray St & Edgeware Rd	481	511	646	722
Murray St	Between Murray St Access & Smidmore St	489	562	686	870
Murray St	Between Smidmore St & Edinburgh Rd	324	356	458	566
Smidmore St	Between Murray St & Edgeware Rd	91	116	109	168
Edinburgh Rd	Between Victoria Rd & Fitzroy St	1165	1414	947	1382
Edinburgh Rd	Between Fitzroy St & Smidmore St	1343	1588	1299	1763
Edinburgh Rd	East of Smidmore St	797	1064	535	882
Edinburgh Rd	West of Sydney Steel Rd	798	1115	528	957
Edinburgh Rd	Between Sydney Steel Rd & Murray St	779	898	526	627
Edinburgh Rd	Between Murray St & Railway Pde	996	1134	832	1019
Edinburgh Rd	Between Railway Pde & Bedwin Rd	598	686	550	620
Smidmore St	East of Edinburgh Rd	666	739	869	1137
Smidmore St	West of Murray St	404	434	526	604
Fitzroy St	Between Sydenham Rd & Edinburgh Rd	409	503	428	494
Sydenham Rd	North of Fitzroy St	1251	1313	1221	1261
Sydenham Rd	South of Fitzroy St	1340	1396	1223	1249
Bedwin Rd	Between Edinburgh Rd & Unwins Bridge Rd	1896	2077	1812	2074
Unwins Bridge Rd	West of Bedwin Rd	1771	1825	1551	1615
May St	East of Bedwin Rd	1263	1332	1080	1190
Campbell Rd	South of Unwins Bridge Rd	690	748	441	529

Of particular relevance to concerns that have been expressed in relation to traffic flows through the Edgeware Road / Alice Street intersection are the following:

- The orientation of the new car park will be towards Edinburgh Road. Traffic would find this car park much easier to access via Enmore Road/Edinburgh Road rather than via Edgeware Road, Victoria Road, Murray Street;
- Traffic exiting this car park and heading towards Enmore Road to the north would not be able to turn right from Edgeware Road into Enmore Road and so this traffic would also be obliged to use Edinburgh Road-Enmore Road instead of Edgeware Road;

- Traffic usage of Edgeware Road in peak traffic periods is further deterred due to increased delays along this road compared to Enmore Road south of Stanmore Road; and
- Notwithstanding conditions on Edgeware Road, it carries more traffic than does Enmore Road at Edinburgh Road. Thus there would be more potential to intercept passing traffic from it compared to Enmore Road.

2.5 Effects of Changes to Generated Traffic

The effects of the generated traffic would be most apparent at the main intersections in the area which collectively control the capacity of the local road system. **Table 2.2** below provides results of a re-analysis of these intersections. As before, this was undertaken using the SIDRA intersection analysis program. Summary results of this analysis are provided in **Appendix C** of this report.

Table 2.2 also presents the results of the SIDRA analysis of the current operation of the existing intersections within the study network, and compares these with the SIDRA results for predicted future operation of the intersections within the study network, including proposed intersection improvements.

As part of the re-analysis, previously proposed intersection improvement schemes have been revisited, taking in to account the latest proposal with Smidmore Street remaining open and the Master Plan's reduction in additional retail floor area of about 22%, the following lists the main amendments to intersection improvements that are now proposed under the latest scheme:

- **Edgeware Rd / Llewellyn St / Alice St Intersection**
  - The previous proposal recommended extending no parking restrictions on Edgeware Road north approach and Alice Street approach to 50m;
  - At present, 17m on the Alice Street approach is designated as 'No Stopping', with a following 50m of kerbside designated as 'No Parking between 3.30 – 5.30pm, Mondays to Fridays'. It is recommended that the existing restriction be extended to 6.00pm to fully cover the weekday evening peak period. This would result in the loss of about 8 parking spaces over a half hour weekday period.

- **Bedwin Rd / May St / Campbell Rd / Unwins Bridge Rd Intersection**
  - The previous proposal recommended banning parking for a length on the southern side of May Street and the northern side of Unwins Bridge Road, reconfiguring the road marking and lane layout on the Unwins Bridge Road approach and introduction of a 'diamond lead' phase for right-turning traffic on both of these approaches;
  - The current proposal is generally similar to the previous proposal and includes the diamond lead phase and parking restrictions on the northern side of Unwins Bridge Road that would result in the loss of about three parking spaces during weekday evening and Saturday peak traffic periods. However, the scheme has been amended so that existing parking on the southern side of May Street is maintained by reducing the eastbound provision in May Street to one lane and displacing about three parking spaces on that side instead. This would leave existing parking intact adjacent to houses on the southern side of May Street and only displace parking adjacent to the park opposite. The latest scheme for this intersection is shown indicatively on **Figure 5**.
- **Edinburgh Road Intersections with Sydney Steel Street and Murray Street**
  - Previous scheme proposed roundabout intersections that could accommodate U-turning buses;
  - Current scheme proposes a smaller roundabout for the intersection with Sydney Steel Road and maintains the existing roundabout at the Murray Street intersection. This change would minimise any reductions in footpath widths adjacent to the roundabout.

LANE RELOCATION AND PARKING RESTRICTIONS FOR UNWINS BRIDGE ROAD AND MAY STREET

Marrickville Metro PPR

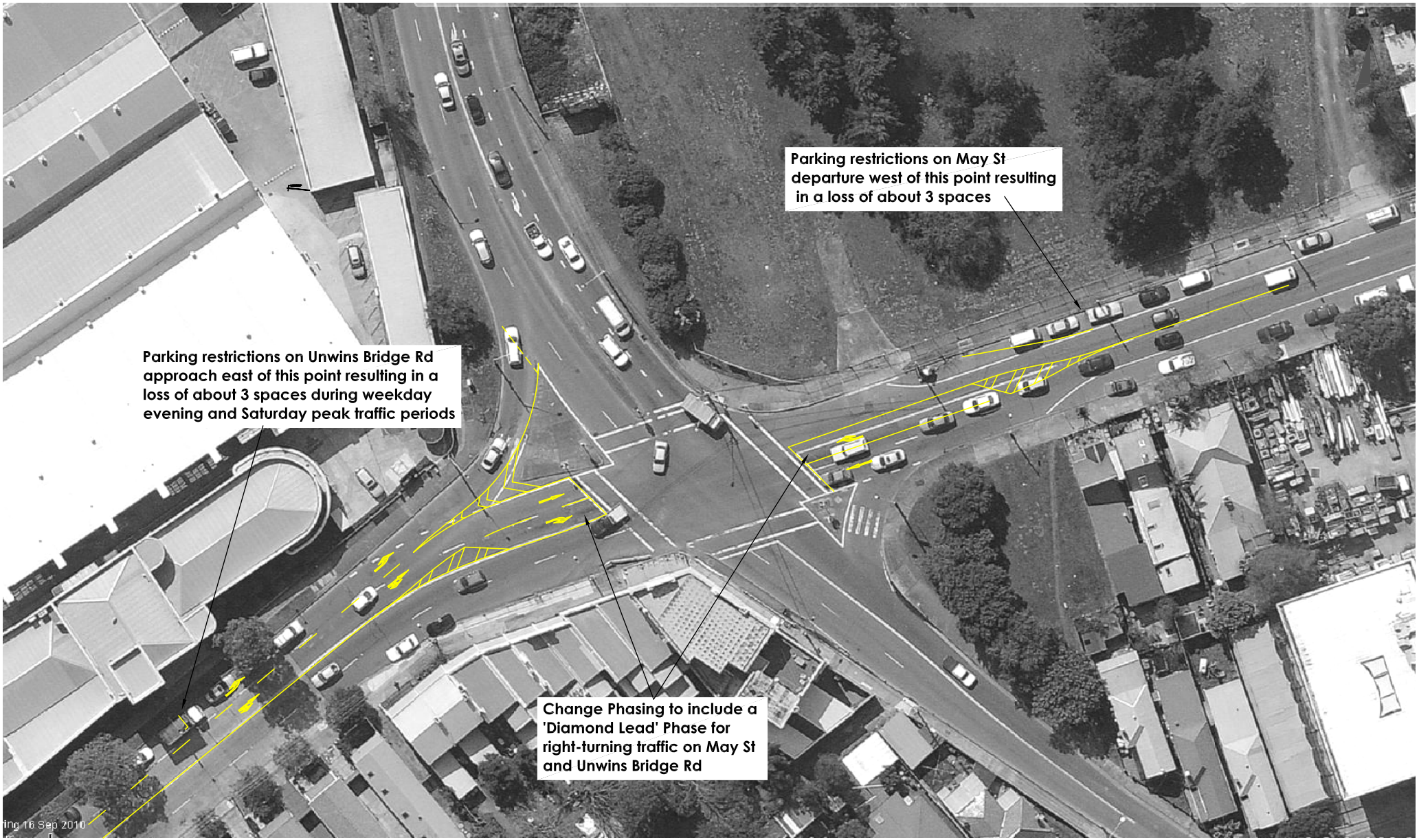

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Figure 5

Date: November 2010

Table 2.2 – Comparison of Existing and Future Peak Hour Intersection Operation

Intersection		Control	Thursday PM		Saturday	
			LoS	Av. Delay	LoS	Av. Delay
Enmore Rd / Llewellyn St	Existing	Signals	B	22.0	B	20.3
	Future	Signals	B	27.0	B	27.7
Addison Rd / Enmore Rd	Existing	Signals	B	25.1	B	22.6
	Future	Signals	C	29.7	C	29.2
Victoria Rd / Edinburgh Rd	Existing	Signals	B	28.1	B	27.2
	Future	Signals	C	30.7	B	28.2
Edgeware Rd / Alice St / Llewellyn St	Existing	Signals	D	56.2	D	53.1
	Future	Signals	D	46.2	D	55.1
Edgeware Rd / Victoria Rd	Existing	Signs	C	41.3	C	41.8
	Future	Signs	D	42.6	D	44.3
Edinburgh Rd / Fitzroy St	Existing	Roundabout	B	15.5	A	11.9
	Future	Roundabout	B	26.7	B	15.2
Fitzroy St / Sydenham Rd	Existing	Signs	A	11.5	A	12.0
	Future	Signs	A	12.0	A	12.3
Edinburgh Rd / Smidmore St	Existing	Signals	B	26.7	C	29.6
	Future	Signals	B	26.6	D	52.3
Smidmore St / Murray St	Existing	Roundabout	A	8.0	A	8.2
	Future	Roundabout	A	7.9	A	8.6
Edinburgh Rd / Sydney Steel Rd	Existing	Signs	A	11.6	A	9.4
	Future	Roundabout	A	11.6	A	10.2
Edinburgh Rd / Murray St	Existing	Roundabout	A	11.2	A	10.7
	Future	Roundabout	A	11.7	A	11.2
Edinburgh Rd / Railway Pde	Existing	Roundabout	A	9.8	A	9.6
	Future	Roundabout	A	10.6	A	9.1
Edinburgh Rd / Bedwin Rd	Existing	Signs	B	24.8	B	24.2
	Future	Signs	C	30.0	B	25.5
Bedwin Rd / Unwins Bridge Rd / Campbell Rd / May St	Existing	Signals	D	50.4	D	46.9
	Future	Signals	B	26.2	C	29.7

Table 2.2 indicates that subject to the proposed improvements as outlined above, all existing intersections would operate satisfactorily under the forecasted future traffic conditions of the amended Marrickville Metro scheme.

Furthermore, the proposed improvement scheme for the Bedwin Road intersection with May Street-Campbell Road-Unwins Bridge Road would not only offset the impact of the proposed development, but the analysis indicates that the improvements would improve the performance of the intersection above its current performance levels.

With regard to the Edgeware Road intersection with Llewellyn Street-Alice Street, the nett effect is that the proposed development would add little traffic to Edgeware Road and accordingly the analysis indicates that the half hour extension of the existing parking restrictions on Alice Street would be sufficient to maintain the current intersection performance levels during the weekday evening peak period. This extension does not provide any improvement for Saturday intersection operation; however, the latest analysis for the amended scheme shows that a Level of Service of D would be maintained.

Finally, it is noted that the traffic analysis also takes into account additional traffic that would be generated by the Council's Aquatic Centre development and by an approved residential development on Alice Street. This is shown on Figure B2 in Appendix B. As outlined below, this traffic has a greater influence on the operation of the intersection of Edgeware Road with Llewellyn Street-Alice Street than would the proposed expansion to the Marrickville Metro shopping centre. By way of comparison, on a Thursday evening these other two developments are expected to add some 69 vehicle trips per hour to the intersection compared to 16 additional vehicle trips from the expansion of the Marrickville Metro.

2.6 Vehicle Servicing Arrangements

The modified design would continue to accommodate all loading on-site with loading confined to internal loading areas. This would lead to significant benefits to Murray Street which at present suffers from considerable on-street manoeuvring of large trucks including in particular full size semi-trailers servicing the Aldi Store.

The entrance to the Murray Street loading area would be moved further away from residential properties on the other side of the Murray Street and this would also benefit the amenity of those residents.

2.7 Car Park Accesses

The Murray Street access to the rooftop car parking in the existing centre would be unchanged. Access to the existing rooftop car parking from Smidmore Street would be repositioned slightly to allow more active frontage. To minimise car park access traffic in Smidmore Street over the proposed pedestrian crossing between the existing and new building, entry access to this ramp would be made left-turn entry only; right-out and

left-out would be maintained for exiting traffic. Access to the rooftop car park on the new property would be moved slightly but its operation would remain unchanged.

The only change of relevance would be that because there would no longer be an overhead connection between the two car parks, there would be no cross flow between car parks. The nett effect of this would be more emphasis on access to the new site from Edinburgh Road compared to Edgeware Road.

2.8 Bicycle Parking Provision

Bicycle parking requirements for the amended development plan are calculated as follows based on travel modes provided in the July 2010 TMAP:

- Existing:
  - Percentage of persons that travel by car as a car driver = 48.1%;
  - Percentage of persons that ride a bicycle = 1.5%;
  - Current parking requirement = 1,100 spaces;
  - Ratio of bicycle parking to car parking = 1.5% over 48.1% = 0.0312 bicycle spaces/car space;
  - Bicycle parking requirement = 34 bicycle spaces.
- Proposed:
  - Percentage of persons that would travel by car as a car driver = 47.2%;
  - Percentage of persons that would ride a bicycle = 2%;
  - Proposed parking requirement = 1,528 spaces;
  - Ratio of bicycle parking to car parking = 2% over 47.2% = 0.0424 bicycle spaces/car space;
  - Bicycle parking requirements = 65 spaces.

(NOTE: For the original scheme 77 spaces would have been required and 80 were proposed)

By way of comparison the Marrickville DCP would require about 142 bicycle spaces. This implies a bicycle mode split of about 4.4%. In the context of the present 1.5% bicycle usage mode split, this implies a nearly threefold increase in bicycle usage. Such a change would obviously be a medium to long term objective as travel behaviour tends to change only gradually. In these circumstances it is considered appropriate to provide bicycle parking now in line with the TMAP strategy. Then over time increased bicycle

usage would reduce the need for car parking and would thus liberate car spaces to be used for bicycles.

If 80 bicycle spaces were provided initially as proposed, it would only take about 10 car spaces to allow the additional 62 bicycle spaces to be provided. The matter of providing additional bicycle parking as customer travel habits change is one that is faced by all shopping centre managers. It is a matter of self interest that customer needs be provided for. In this case, the conversion of what may in future be unneeded car parking to bicycle parking for staff and customers would not be unduly onerous and it is submitted that the shopping centre management could be left to deal with this as a matter of self interest without further authority involvement.

2.9 Effects on Bus Services

2.9.1 Bus Movements

The scheme with Smidmore Street closed required the bus services that arrived from the east (Routes 308 and 352) to U-turn at a new large roundabout to be constructed at the intersection of Edinburgh Road with Sydney Steel Road. The buses that arrived from the west (Route 355) would have been required to turn around via a route extension using Edinburgh Road, Edgeware Road, Smidmore Street and Murray Street.

With the amended scheme, the retention of Smidmore Street through the centre would mean that neither the U-turn movement at Sydney Steel Road, nor the route extension to Edgeware Road would be required. Instead buses would loop around the block, resulting in no change to their travel distance. Accordingly, Figure 9 of the July 2010 TMAP, which presented the Proposed Bus Movements, has been updated for the latest proposal, a copy of which is attached at **Appendix D**

Bus patrons would still benefit from the greatly improved bus terminus on Edinburgh Road.

2.9.2 Bus Stop Provision

Plans of the proposed new interchange suitable for Project Application level of consideration have been prepared by Lend Lease Design (architect) and Cardno (civil

engineering). These have been sent with a consultation letter to NSW State Transit (see **Appendix E**).

The STA Bus Stop Style Guide indicates that a bus zone for three standard buses requires a length of 49.5m to 59.5m made up as follows:
Draw-in length = 6m;

- Three buses 12.5m x 3 = 37.5m;
- Separation between buses:
  - 2 x 1m for nose-to-tail operation = 2m;
  - 2 x 6m for independent operation = 12m;
- Draw-out length = 4m;
- Total = 49.5m for nose to tail operation;
- Total = 59.5m for independent operation

The available length that can be provided for the proposed Edinburgh Road bus zone, including potential drawn-in and draw-out length beyond the 56.8m bus zone length indicated on the Cardno Plan is about 70m.

Thus the proposed bus zone would allow independent operation for three normal 12.5m long buses.

Each 14.5m long bus would require an additional 6m of length for independent operation. Independent operation of three long buses would require 71.5m, which would just exceed the available length. Two long buses plus one normal bus would require 68.8m which would be available.

For non independent operation three long buses would require 61.5m. Thus the available length for the bus zone would allow for:

- Independent operation by three normal buses;
- Independent operation by two long buses and one normal bus; and
- Nose to tail operation by three long buses.

By way of comparison it is noted that the existing bus zone in Smidmore Street is only 35.8m long with a driveway crossing on one side and a "No Stopping" control on the

other side allowing draw-ins and draw-outs. This length would only allow independent operation by one normal bus and one long bus.

The proposed bus terminus will thus increase bus stop capacity by 50%. This will provide more than sufficient capacity to meet the needs of the proposed expansion.

2.10 Effects on On-Street Car Parking

2.10.1 Adjacent to the Centre

The provision of retail development on both sides of Smidmore Street will allow the kerbside lanes on each side of it to be allocated to uses related to the shopping centre and to the convenience of their customers. In addition, the location of the bus terminus in Edinburgh Road adjacent to the centre will allow additional kerb space on Smidmore Street to be allocated to taxis.

On Murray Street the internalizing of loading bays off it will provide more kerb space along it for kerbside parking adjacent to the centre.

The overall arrangement would give more emphasis to buses, taxis and private drop-off and pick-ups rather than car parking. This approach is considered appropriate because car parking would be satisfactorily accommodated within the car parks on the site, whereas the other activities could only reasonably take place on-street.

To check the nett effect on on-street parking adjacent to the centre, the existing parking provision was measured and compared with that proposed for the expanded centre. **Table 2.3** provides a comparison of the existing and proposed provision for different kerbside uses.

Table 2.3 – Changes in Kerbside Parking Adjacent to Marrickville Metro

Road Section	Existing (m)				Proposed (m)			
	Bus Zone	Taxi Zone	No Parking	Car Parking	Bus Zone	Taxi Zone	No Parking	Car Parking
Smidmore Street								
North Side	54	9	90	0	0	0	119	34
South Side	0	0	14	92	22	38	0	46
Murray Street South								
West Side	0	0	0	40	0	0	20	20
East Side	0	0	0	50	0	0	0	50
Murray Street North								
West Side	0	0	80	54	0	0	51	83
East Side	0	0	12	80	0	0	12	80
Edinburgh Road (West)								
North Side	0	0	0	60	0	0	60	0
South Side	0	0	0	38	0	0	0	38
Edinburgh Road (East)								
North Side	0	0	0	78	75	0	3	0
South Side	22	0	0	36	0	0	0	58

Note – Smidmore Street – Murray Street to Edinburgh Road
Murray Street North Smidmore Street to Victoria Road
Murray Street South Edinburgh Road to Smidmore Street
Edinburgh Road East – Smidmore Street to Sydney Steel Street
West Sydney Steel Street to Murray Street

Table 2.3 indicates that the length of car parking kerb space adjacent to the centre would be decreased by about 119m. This is equivalent to about 20 parking spaces. This would arise from an increase in kerb length allocation to buses and taxis of about 50m, which is considered a more appropriate allocation of kerb space in terms of sustainable transport management. The rest of the reduction is parking arises from the provision of additional "no parking" restrictions which could be used for set-down and pick-up activities. "No parking" restrictions and would also run across the proposed raised pedestrian crossing on Smidmore Street which would tie the two sites together.

Overall, it is considered that the result for parking will be a good one in terms of transport access to the centre.

2.10.2 Intersection of Edgeware Road with Alice Street-Llewellyn Street

As indicated above, there would be a loss of about 8 spaces over a half hour period on weekday evenings due to an extension of the hours of the existing evening parking restrictions.

2.10.3 Intersection Unwins Bridge Road/May Street/Campbell Street/Bedwin Road

There would be a loss of three parking spaces on the northern side of Unwins Bridge Road adjacent to the industrial/warehouse units at 1-7 Unwins Bridge Road. There would also be a loss of three parking spaces on the northern side of May Street adjacent to the park at the corner of Bedwin Road. The revised intersection improvement scheme would no longer result in the loss of parking outside private houses.

3 Response to Authority Submissions

3.1 Introduction

This section sets out the submissions made by relevant government (state and local) authorities to the Part 3A application. The following tables present the points raised by each of the respective authorities and include how each of these points has been responded to as part of this Preferred Project Report.

3.2 NSW Department of Planning, (14 October 2010)

3.2.1	The PPR should sufficiently respond to Council's resolution in terms of Option B. Any alternative option that maintains Smidmore Street as a through road open to traffic should give consideration to creating active frontages on both sides of Smidmore Street between Murray Street and Edinburgh Road, and a high quality public domain. This should encourage pedestrian activity, thereby minimizing additional amenity impacts to residents of Victoria Road. Consideration should also be given to the role of Smidmore Street as a link between the existing centre and the Edinburgh Road site, encouraging pedestrians and vehicles to circulate while minimising the potential for adverse conflicts between users. This should include a detailed assessment of the treatment/possible upgrade of Smidmore Street to reinforce its role as a link between the two sites.	Retention of Smidmore Street is now proposed and the effects of this are analysed above. A modified design for the Smidmore Street frontages responds to the request for active frontages. A raised pedestrian crossing is proposed across Smidmore Street between the existing and new buildings. This will both facilitate pedestrian movements and discourage traffic from using Smidmore Street. In addition, entry access to the existing Smidmore Street car park access ramp will be restricted to left-turn entries only to minimise traffic Smidmore Street pedestrian crossing.

3.2.2	Consideration shall be given to the ability to provide additional bus services to cater for the proposed increased floorspace proposed. Evidence of consultation with the STA should be provided in this regard.	Changes/increases in bus services are a matter for Transport NSW to approve and fund. Accordingly letters have been sent to both Transport NSW and STA. Copies of these are provided in Appendix E of this report. Notwithstanding this service provision, the Concept Plan does seek to increase the number of active bus stops. As outlined above in the first part of this report, the available length for the bus zone would allow for: • Independent operation by three normal buses; • Independent operation by two normal buses and one long bus; and • Nose to tail operation by three long buses. By way of comparison it is noted that the existing bus zone in Smidmore Street would only allow independent operation by one normal bus and one long bus; therefore, the proposed bus terminus will thus increase bus stop capacity by 50%.
3.2.3	The PPR shall provide a revised assessment (including specialist reports/TMAP where necessary) that reflects any alternative option being pursued.	An assessment of traffic, parking and implications for buses is provided above. Arrangements for cyclists and pedestrians would be largely unchanged. The only changes proposed are in response to matters raised in submissions and are addressed below as a response to each actual submission.
3.2.4	A detailed response to traffic and parking concerns raised by Council, the RTA and NSWTI, particularly in relation to on-street car parking, pedestrian movements around the site, including the location of pedestrian crossings, the location of traffic calming devices and impact on pedestrian desire lines.	These are provided below.

3.2.5	A detailed response to issues raised by the STA in their letter dated 16 August 2010, including the submission of requested additional information.	This is provided below. A copy of a letter to the STA is provided in Appendix E.
3.2.6	The following additional information as requested by the RTA (or a written response from the RTA indicating that these issues have been satisfactorily resolved): • SIDRA analysis to support the re-phasing of the Unwins Bridge Road/Bedwin Road/May Street/Campbell Street intersection. • Methodology used for determining trip distribution and route assignment of the additional traffic generated by the proposal.	SIDRA analysis files have been submitted to the RTA and summary results outputs are attached at Appendix C. The methodology for determining the trip distribution is outlined above in Section 2.4 and on the traffic flow diagrams attached at Appendix B. This information has been included in a letter to the RTA, a copy of which is attached at Appendix E.
3.2.7	A swept path analysis for each of the proposed loading docks.	Swept-path diagrams prepared by civil engineering consultant Cardno were submitted with the original application. These have been updated for the modified scheme and for ease of reference are provided as **Appendix F** of this report.

3.3 NSW Roads and Traffic Authority, (20 September 2010)

The following comments from the RTA have been received via the Sydney Regional Development Advisory Committee that is chaired by the RTA

3.3.1	The RTA advises that the major roads in close proximity to the subject site are regional roads. Therefore, comment should be sought from Council with regard to the traffic impact of the proposed development on these roads.	Noted.

3.3.2	The TMAP recommends modifying the existing layout of the intersection of Unwins Bridge Road/Bedwin Road/May Street/Campbell Street and changing the signal phasing of this intersection. The RTA requests an electronic copy of the Sidra analysis and a detailed concept plan of the modified intersection be submitted to the RTA for review.	These have been submitted to the RTA as outlined in the letter in Appendix E.
3.3.3	The RTA requests that the methodology used for determining the trip distribution and route assignment of the additional traffic generated by the proposed development be submitted to the RTA for review.	Submitted with letter to the RTA, (see Appendix E).
3.3.4	The State Transit Authority (STA) and Transport NSW shall be consulted for the proposed additional bus services and bus stops and this consultation shall be to the satisfaction of the Department of Planning.	Letters sent to both, copies in Appendix E.
3.3.5	The provision of off-street car parking, loading area and bicycle storage should be provided to the satisfaction of Department of Planning.	Off-street car parking is proposed to comply with RTA guidelines. It is anticipated that this would be to the satisfaction of the DoP.
3.3.6	The layout of the proposed car of parking areas, and driveway associated with the subject development (including, grades, turn paths, sight distance requirements, aisle widths, aisle lengths and parking bay dimensions) should be in accordance with AS2890.1- 2004	This is proposed for all new works. It is anticipated that this would be to the satisfaction of the DoP.
3.3.7	Clear sight lines shall be provided at the property boundary line to ensure adequate visibility between vehicles leaving the car park and pedestrians along the frontage road footpath in accordance with Figure 3.3 of AS 2890.1 - 2004 for light vehicles and AS 2890.2 - 2002 for heavy vehicles	Agreed – suggest condition of consent.
3.3.8	The parking areas and entry/exit points need to be clearly delineated through line marking and signage to ensure smooth, safe traffic flow.	Agreed – suggest condition of consent.

3.3.9	The swept path of the longest vehicle entering and exiting the subject site and loading area, as well as manoeuvrability through the site, shall be in accordance with AUSTROADS. In this regard, a plan shall be submitted to Department of Planning for approval, which shows that the longest vehicle can access the site via the existing road network.	Swept-path diagrams prepared by civil engineering consultant Cardno were submitted with the original application. These have been updated for the modified scheme and for ease of reference are provided as Appendix F of this report.
3.3.10	All loading and unloading shall occur on site.	Agreed – suggest condition of consent.
3.3.11	Appropriate street lighting shall be provided at the driveway entry and exit in order to provide adequate visibility at night.	Agreed – suggest condition of consent.
3.3.12	All vehicles are to enter and leave the subject site in a forward direction.	Agreed – suggest condition of consent.
3.3.13	All vehicles should be wholly contained on site before being required to stop.	Agreed – suggest condition of consent.
3.3.14	A Demolition and Construction Traffic Management Plan detailing construction vehicle routes, number of trucks, hours of operation, access arrangements and traffic control should be submitted to Council, for approval, prior to the issue of a construction certificate.	Agreed – suggest condition of consent.
3.3.15	All works/regulatory signposting associated with the proposed development are to be at no cost to the RTA.	Agreed – suggest condition of consent.

3.4 Marrickville Council

3.4.1 Marrickville Council Committee Report, (7 September 2010)

3.4.1.1	The TMAP does not provide a proper assessment of the Option 2; where Smidmore Street will remain open for vehicular traffic.	This assessment is now provided in this report.

3.4.1.2	The TMAP underestimates the increase in traffic that will use Edgeware Road north of Llewellyn Street, as well as Alice Street and the section of Victoria Road east of the Metro.	This is not agreed with. The analysis outlined in Section 2.4 of this report and supporting traffic flow diagrams attached at Appendix B, explain why there would be little traffic increase on these roads.
3.4.1.3	Based on above the traffic impacts at the Edgeware Road / Alice Street / Llewellyn Street and Edgeware Road / Victoria Road intersection would be worse than predicted in the TMAP.	As explained above, the TMAP analysis methodology is appropriate for the Option 1 scheme that it assesses. The same general methodology has been applied in this assessment of the Option 2 scheme with Smidmore Street remaining open. The amount of additional retail floor area has also reduced by about 22%; therefore, the SIDRA analysis has been updated accordingly.
3.4.1.3	To mitigate the intersection performance at Edgeware / Alice / Llewellyn the proposal calls for the extension of parking restrictions at the approaches. This will have a significant negative impact on local resident on-street parking availability.	The need for such parking restrictions will arise from other development (Council Aquatic Centre and private development on Alice Street) rather than from the expansion of Marrickville Metro. The basis of this is explained in Section 2.5 of this report. It appears that Council missed this effect when it considered the other two developments.
3.4.1.4	Similarly the proposed slip lane and parking restrictions extension in May Street approaching Bedwin Road intersection will significantly impact on street parking availability in May Street.	As outlined in Section 2.5 of this report and shown on Figure 5, the improvement scheme for this intersection has been amended. As a result, the impact to on-street parking has been significantly reduced. Furthermore, the amended scheme no longer impacts on parking outside private houses.
3.4.1.5	Proposed changes to bus operations (i.e. bus stops and re routing) are dependent on agreement being obtained from Sydney Buses.	The proposal no longer requires the rerouting or U-turning of buses. Accordingly the roundabout proposed for this intersection has been redesigned to overcome these concerns. A copy of the modified design is provided in Appendix F.

3.4.1.6	The proposed roundabout design at Edinburgh Road / Sydney Steel Road: • narrows the footpath immediately adjacent to the entrance to the centre on Edinburgh Road where pedestrians are directed; • deflects vehicles (eastbound) towards the entrance of the centre creating a potential safety issue; and • removes footpath area on both Councils bicycle and pedestrian paths at the intersection of Sydney Steel Road and Edinburgh Road.	This design has been changed to overcome these concerns.
3.4.1.7	The TMAP proposes that the development will initially incorporate bicycle parking for 80 bicycles with an option to increase this as required in the future. However there is no mechanism to ensure that this will occur at a future time. The proposed bicycle provision is a very large reduction on what would be required under Council's DCP and it is not clear how the TMAP arrived at the suggested figure. Also it is considered that the bicycle parking should be provided wholly within the development to avoid obstruction to footpaths, public areas and walking routes adjacent the shopping centre.	As outlined in the first part of this report, the bicycle parking requirement for the amended development plan has been calculated on the basis of bicycle usage forecasted for the proposed development. Forecasts indicated that 65 spaces would be required. 80 bicycle spaces are still proposed in the amended development. Should future demand for cycle parking increase, it would only take the conversion of about 10 car spaces to allow the additional 62 bicycle spaces recommended by Marrickville DCP bicycle parking rates. It is submitted that the shopping centre management be left to deal with this as a matter of self interest in looking after the needs of its customers without the need for further authority involvement.

3.4.1.8	Issues concerning proposed bicycle routes are as follows: • Shirlow Street is a narrow (i.e. approx. 5m wide) one way street and is not wide enough for a contra flow bicycle lane as proposed south of Garden St. Both traffic and parking lanes need to be provided within the road carriageway. A contra flow lane could not be provided without a loss of on-street car parking. • Regional Cycle Route No.5 (stage 2) has been omitted from any proposed works. This is an important regional cycle route to the Metro.	In suggesting the use of Shirlow Road as a two-way bicycle route it was considered that it may be possible to squeeze a narrow contra flow bicycle lane in it. This was suggested as due to its directness, many cyclists would tend to travel contra flow along it anyway because to do so would be so convenient. However, in the light of Council's concerns it is now proposed to retain the proposed route from Sydenham Station along Shirlow Street, but to change the route to Sydenham Station so it instead uses Saywell and Cadogen Streets (which form part of an existing cycle route), then use Sydenham Road to get to the Sydenham Road/Shirlow Street intersection. Thereafter a two-way route would continue along Sydenham Road and Railway Parade to Sydenham Station as originally proposed. Regional Cycle Rate No. 5 (Stage 2) has been added to the TMAP plans, a copy of which is attached in Appendix D.

3.4.1.9	A number of pedestrian and cyclist improvements have been proposed as part of the TMAP. It is difficult to provide a proper assessment of some of the pedestrian improvements as no pedestrian volumes are provided in the report. In addition, an anomaly which is shown in Figure 10 is new traffic signals at the intersection of Edgeware Road and Victoria Road. This improvement is not listed in the body of the report and requires clarification as whether or not it is proposed as part of the TMAP.	Table 6.6 in the TMAP indicates that pedestrian trips to and from the centre at the busiest time will increase by about 300 trips per hour. With the reduced floor area in the amended proposal, this would reduce to about 270. Figure 10 in the TMAP indicates that these movements would be spread over about 8 principal access routes to the centre. Thus the increase on any one would be on average about 35 trips per hour. This number would enhance the need for improved pedestrian facilities but would be sufficiently low as to not warrant quantitative capacity analysis. Rather than for capacity reasons, pedestrian improvements are proposed as a matter of good practice and practicality. Initially signalisation of the Victoria Road/Edgeware Road intersection was considered and this is discussed in the TMAP. However, it was decided that such signalisation would not be warranted. The anomaly of such traffic signals still being shown on Figure 10 the TMAP pedestrian route improvement plan in the TMAP is acknowledged and the plan have been changed. A copy of the changed plan is provided in Appendix D.
3.4.1.10	Dates on which traffic surveys were undertaken have not been identified in the Report. The potential influence of seasonal fluctuations in traffic volumes can therefore not be determined.	Saturday 13th and Thursday 18th February, 2010. These dates were not within a school holiday period.

3.4.1.11	The TMAP refers to Edgeware Road / Bedwin Road as a "Collector" road when in fact it is a classified Regional Road performing the function of a sub-arterial road. The description needs to be amended.	Noted.
3.4.1.12	The additional use of public transport (buses) to access the site in lieu of car trips is based on the premise that additional services / buses will be provided by Sydney Buses. There is no certainty in this assumption.	The TMAP estimates that when the development was completed there would be about 40 additional visits per hour on a Thursday evening and about 70 on a Saturday morning. These figures represent between half and one full bus per hour. As Marrickville Metro is served by over 20 buses each-way in the evening peak hour that stop in the vicinity and by 10 buses per hour on a Saturday morning, it is expected that these additional passengers could be accommodated without and additional services. Nevertheless, Transport NSW has the responsibility to ensure that bus services are adjusted to match passenger demands as they change. It is anticipated that this would apply in Marrickville as it would for anywhere else in the Metropolitan Area.
3.4.1.13	The proposal to divert traffic and bus routes along the Edgeware Road extension through the Bedwin Road underpass is not supported. The geometry of the Edgeware Road extension south of Darley Street is not suited to significant increases in traffic nor to buses without significant parking restrictions being introduced along the residential section.	This diversion of buses is not proposed in the amended scheme with Smidmore Street left open.

3.4.1.14	The proposed location of a new marked pedestrian crossing in Edinburgh Road east of Sydney Steel Road is considered problematic due to its close proximity to both a roundabout and proposed bus stop area. There is also no demonstration that the necessary warrants for a marked pedestrian would be met.	The proposed pedestrian crossing would be by way of a central refuge in the splitter island on the approach to the proposed roundabout at the intersection of Sydney Steel Road with Edinburgh Road. Pram ramps would be provided on each side of Edinburgh Road. A marked crossing is not proposed and hence the question of a warrant does not arise.
3.4.1.15	The proposed siting of a pedestrian refuge on Edgeware Road, south east of Smidmore Street raises safety concerns due to its proximity to an "S" Bend on Edgeware Road which limits sight distance for pedestrians and traffic.	Ultimately this crossing would be a matter for the Local Traffic Committee. However, since receiving this comment the suitability of this crossing point has been re-examined on a site visit. From this, **Figure 6** was prepared which indicates that sight distances would be satisfactory at this location (Figure 6 is located with plans following this Chapter 3 of the report).
3.4.1.16	Further information is required concerning the location and extent of the proposed "Pickup / Set down" zone. These would usually be located in close proximity to entrances.	Attached **Figure 7** indicates proposed "no parking" zones along Smidmore Street. These can legally be used for set-down and pick-up activities. They would be in close proximity to the Smidmore Street entrances.
3.4.1.17	Measures proposed throughout the study will potentially have impacts on the availability of on street parking. This needs to be quantified and assessed.	This is addressed in Table 2.3 in the first part of this report.
3.4.1.18	There are several laneways in the vicinity of Marrickville Metro, which provide access to local residential driveways. The increase in traffic along Edgeware Road, Victoria Road, Llewellyn Street and Alice Street will potentially decrease the accessibility into and out of these laneways.	As outlined previously, nett traffic increases on these roads are expected to be low and thus the impact on access to these lanes would be little changed.

3.4.2 Transport and Urban Planning (TUP) - TMAP Review (August 2010)

Marrickville Council's submission included an independent review of the TMAP, undertaken by TUP.

3.4.2.1	The proposal incorporates a road closure of Smidmore Street between east of Edinburgh Road and Murray Street, as well as road improvement at four intersections. There is an alternative proposal which retains Smidmore Street as a public road (i.e. No closure); however the TMAP does not assess this alternative.	This is addressed above in the first part of this report.
3.4.2.2	Transport and Urban Planning considers that the traffic assignment adopted by Halcrow underestimates the increase in traffic that will use Edgeware Road north of Llewellyn Street as well as Alice Street and the section of Victoria Road east of Marrickville Metro. Transport and Urban Planning also considers that there will be some additional increase in traffic using Lord Street. This will be offset by a reduction of future predicted traffic in a number of other streets. Transport and Urban Planning's assessment is based on the existing road network and traffic controls, the current arrival and departure patterns by shoppers and a review of the trade area	Traffic effects on Edgeware Road are addressed in the first part of this report. Lord Street is already a matter of concern for local residents. We understand that suggestions to calm traffic or discourage through traffic use have been put to Council by residents. Marrickville Metro could assist Council with a reasonable contribution to any such measure, but an actual scheme would need to be developed by Marrickville Council in conjunction with local residents.
3.4.2.3	Based on above the traffic impacts at the Edgeware Road / Alice Street /Llewellyn Street and Edgeware Road / Victoria Road intersection would be higher (i.e. worse) than predicted in the Halcrow report.	As indicated in the report above, most of the impact on the operation of this intersection would arise from additional traffic generated by council's Enmore Park Aquatic Centre and an approved residential development on Alice Street. As the subject development would add only limited traffic to this intersection it would have little effect on the intersection's operation.

3.4.2.4	The changes to bus operations (i.e. Bus stops and re-routing) would need to be agreed to by Sydney Buses. The proposed roundabout at Edinburgh Road / Sydney Steel Road would also need to be designed to accommodate U-turning buses, as well as articulated vehicles.	Noted. With Smidmore Street left open there would no longer be a need for buses to U-turn at the Sydney Steel Road intersection.
3.4.2.5	The proposed location of the taxi rank adjacent the roundabout controlled intersection of Murray Street / Smidmore Street as shown on the architectural plans would result in right of way issues at the intersection and is potentially unsafe. This should be either redesigned or the taxi rank relocated.	The taxi rank has now been relocated into Smidmore Street so this issue no longer arises.
3.4.2.6	Halcrow proposes that the development will initially incorporate bicycle parking for 80 bicycles with an option to increase this as required in the future. However there is no mechanism to ensure that this will occur at a future time. The proposed bicycle provision is a very large reduction on what would be required under Council's DCP und it is not clear how Halcrow arrived at the suggested figure. Also it is considered that the bicycle parking should be provided wholly within the development to avoid obstruction to footpaths, public areas and walking routes adjacent the shopping centre.	This is responded to above in the first part of this report.

3.5 NSW Transport, (31 August 2010)

3.5.1	Provision of up to five car share spaces within the centre car parks with monitoring and further expansion subject to demonstrated demand.	Agreed. It is proposed to initially provide three car-share spaces and this provision would be increased as necessary.
3.5.2	Bicycle parking should be well signed and provided in weather protected locations, close to retail entrances and subject to passive surveillance.	Noted.

3.5.3	Information and signage about cycleways and bike facilities available at the Metro Centre and within the locality should be provided as per Item 10.5 - Pedestrian Way Finding Signage contained in the TMAP.	Agreed.
3.5.4	Transport NSW requests the Green Travel Plan and Travel Access Guide be prepared with reference to the Premier's Council for Active Living - Workplace Travel Plan Resource, http://www.pcal.nsw.gov.au and the Road & Transport Authorities - Travel Access Guide guidelines, http://www.rta.nsw.gov.au	Agreed.
3.5.5	Transport NSW requests further consideration of the following improvements to pedestrian accessibility to enhance the connectivity of surrounding streets to public transport networks and increase customer safety, as detailed in the TMAP: • A new pedestrian crossing in Edinburgh Road east of Sydney Steel Road; and • A new pedestrian refuge across Edgeware Road south east of Smidmore Street.	As noted in the Council submission, it is unlikely that a warrant would be met for a zebra striped-marked crossing over Edinburgh Road near Sydney Steel Road. In view of this the only option would be to incorporate a refuge crossing in the design of the roundabout proposed for the Sydney Steel/Edinburgh Road intersection. A pedestrian refuge across Edgeware Road near Smidmore Street is proposed (see response to Item 3.4.1.14 and Figure 6 of this report).

3.6 NSW State Transit Authority, (16 August 2010)

3.6.1	STA requires a scale, engineering drawing that displays the proposed new bus interchange on Edinburgh Road. This drawing needs to include, length of bus zones, lane widths, locations of j-steam, shelters, infrastructure and any potential implications. • It should be noted that for 3 bus operation as shown on *Drawing (160496:EA006) Proposed Ground Floor Plan* a minimum of 80 metres of bus zone would need to be provided	Plans of the proposed new interchange suitable for Project Application level of consideration have been prepared by Lend Lease Design (architect) and Cardno (civil engineering). These have been sent with a consultation letter to NSW State Transit (see Appendix E). As outlined above in the first part of this report, the available length for the bus zone would allow for: • Independent operation by three normal buses; • Independent operation by two normal buses and one long bus; and • Nose to tail operation by three long buses.
3.6.2	STA requires a scale, engineering drawing that displays the proposed alterations and construction of a roundabout at the Intersection of Edinburgh Road and Sydney Steel Road. This drawing needs to include, height and dimensions for the roundabout, any changes to the intersection, and an auto turn path demonstrating its suitability for 12.5 metre buses.	This plan has been prepared by Cardno Consulting Engineers.
3.6.3	STA requires a scale, engineering drawing that displays the proposed alterations and construction of a roundabout at the Intersection of Smidmore Street and Murray Street. This drawing needs to include, height and dimensions for the Roundabout, any changes to the intersection, and an auto turn path demonstrating its suitability for 12.5 metre buses.	It is now no longer proposed to modify this intersection.

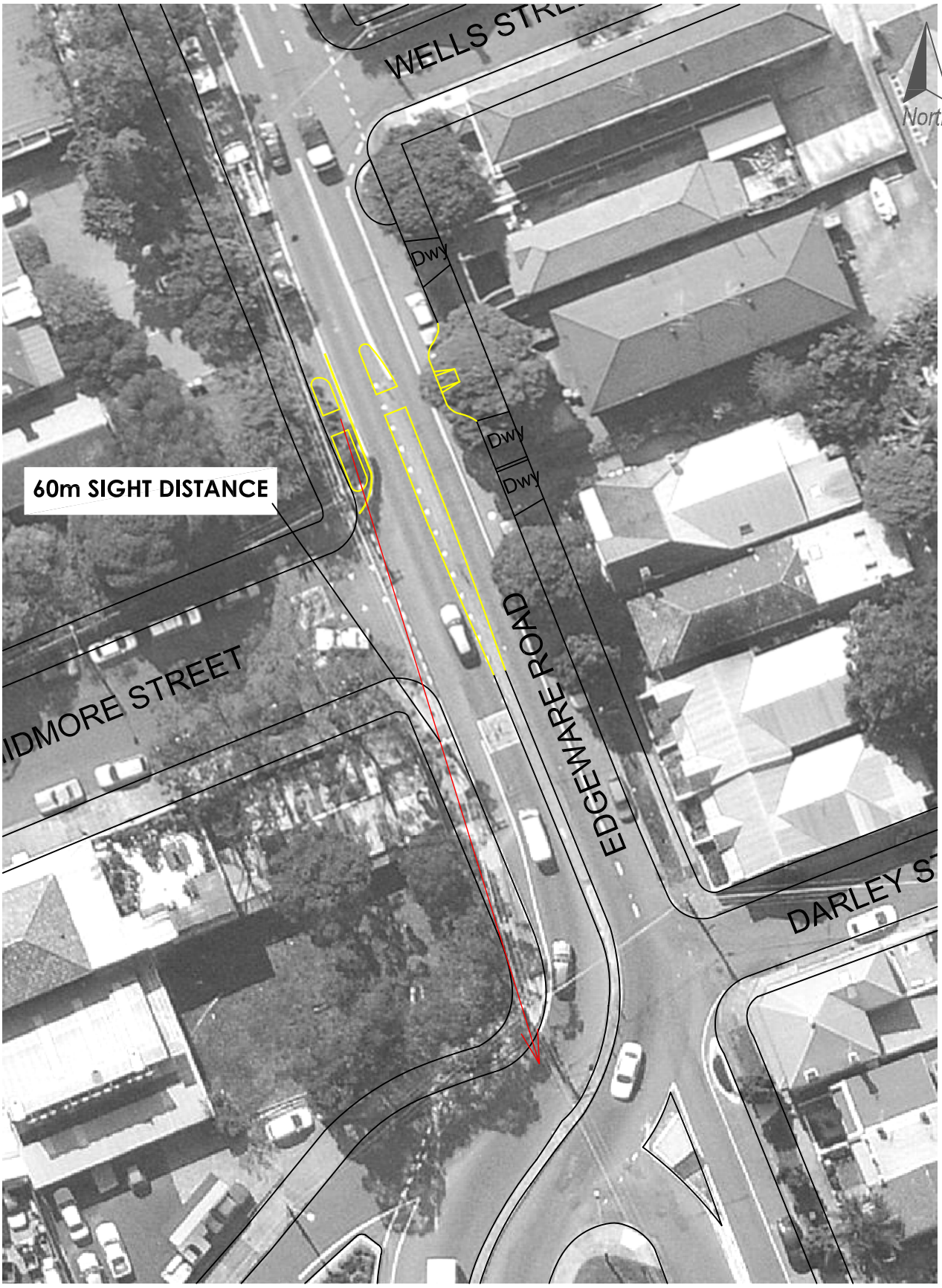
3.6.4	STA requires a scale, engineering drawing that displays the proposed alterations and construction of a round about at the Intersection of Edinburgh Road and Murray Street. This drawing needs to include, height and dimensions for the Roundabout, any changes to the intersection, and an auto turn path demonstrating its suitability for 12.5 metre buses.	It is now no longer proposed to modify this intersection.
3.6.5	Drawing (160496:EA006) Proposed Ground Floor Plan: Briefly outlines loading Dock 1 on the corner of Edinburgh Road and Murray Street. There does not appear to be a driveway leading into loading dock 1, can you please advice of the location of the entrance driveway.	The driveway access to this will be off Murray Street as per the architectural plans.
3.6.6	A detailed traffic management plan particularly during the demolition and constructions phases needs to be provided on how bus operations will be undertaken during the proposed construction. It should outline the proposed staging, when the current bus interchange will be unavailable for use, what temporary arrangements are required, how construction traffic will be managed and when the proposed new interchange will be available for use. All these factors will need to be approved by STA, to ensure minimal impact on bus operations and passengers.	With Smidmore Street now to be left open, the existing Smidmore Street bus stops will remain in action until the Edinburgh Road bus terminus is completed.

3.7 RailCorp, (25 August 2010)

3.7.1	RailCorp supports measures aimed at improving wayfinding and signage for pedestrians from the shopping centre to St Peters and Sydenham stations, in order to support alternative means of transport. The associated directional signage must meet RailCorp standards and be submitted to RailCorp's Communications Department for review. Please contact Tim Edwards on 8922 1751 or Timothy.Edwards@railcorp.nsw.gov.au	Noted.

PROPOSED PEDESTRIAN REFUGE ON EDGEWARE RD

MARRCIKVILLE METRO PPR



Scale: 1:500@A4

Halcrow

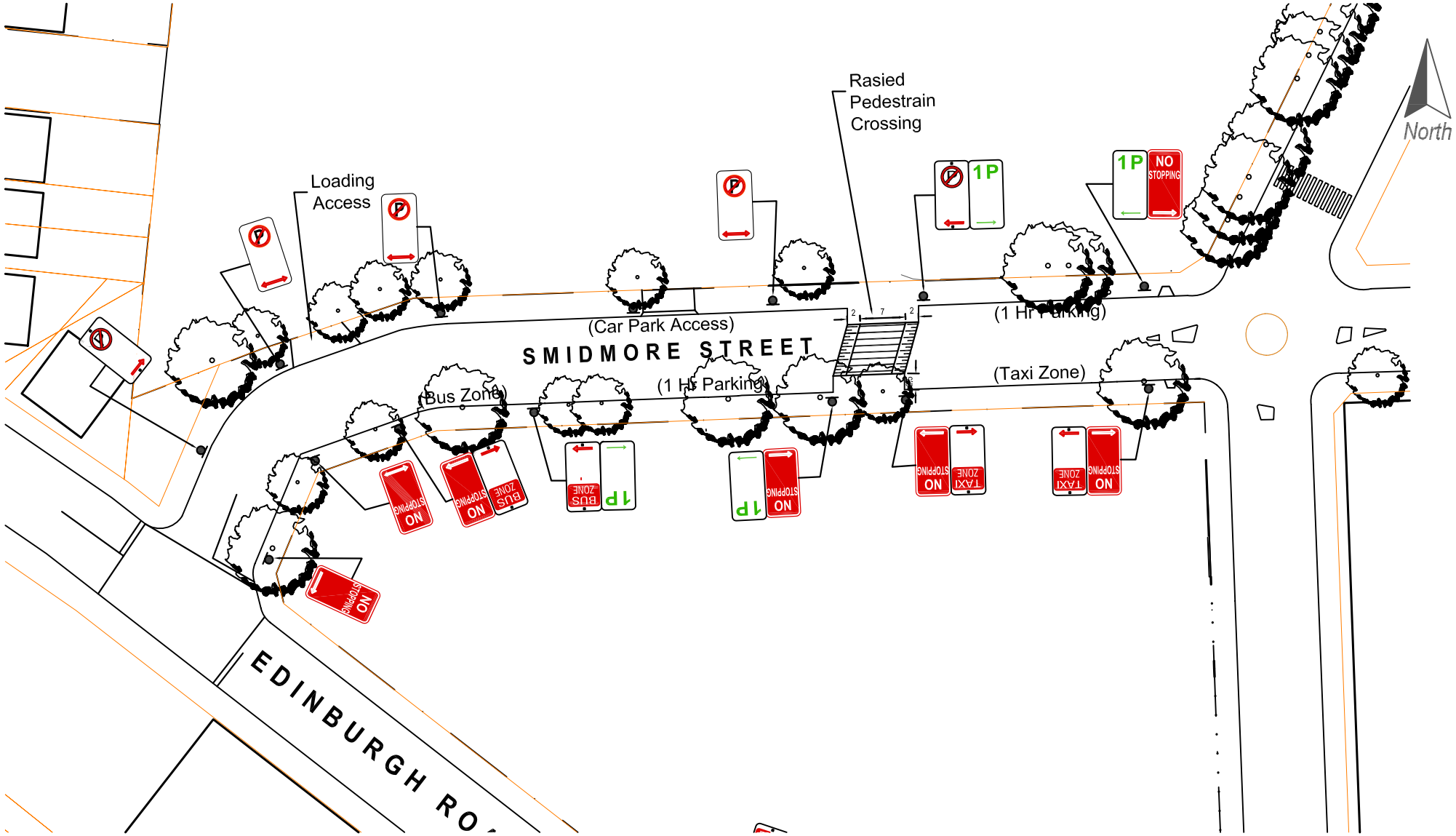
Figure 6

Date: 08 November 2010

Filename: CTLRGWda14

PROPOSED PARKING CONTROLS - SMIDMORE STREET

MARRICKVILLE METRO PPR



Scale: 1:1000@A4

Halcrow

Filename: CTLRGWda12

Figure 7

Date: 02 November 2010

4 Response to Other Submissions

4.1 Introduction

This section sets out the submissions made by other interested parties and the public. The following tables present the points raised and include how each of these points has been responded to as part of this PPR.

4.2 Marrickville Chamber of Commerce

4.2.1 Design Collaborative Pty Ltd on behalf of Marrickville Chamber of Commerce (10 September 2010)

4.2.1.1	The proposal would have a significant adverse impact on existing capacity constraints at the following intersections at peak Saturday trading times within the surrounding area so that their level of service would fall.	
	• Enmore Road / Llewellyn Street intersection with traffic signals from level of service B to C.	• This is not significant and LOS C still represents good operation.
	• Addison Road / Enmore Road intersection with traffic signals from level of service B to C.	• This is not significant.
	• Victoria Road / Edinburgh Road intersection with traffic signals from level of service B to C.	• This is not significant.
	• Edgeware Road / Alice Street / Llewellyn Street intersection with traffic signals from level of service D to E.	• As explained above, most of this is attributable to Council's Aquatic Centre and another approved development.
	• Edgeware Road / Victoria Road intersection with signs from level of service C to D.	• LOS D is still an acceptable level of operation.
	• Edinburgh Road / Fitzroy Street intersection with roundabout from level of service A to B.	• LOS B represents good operation.

	• Edinburgh Road / Smidmore Street intersection with traffic signals from level of service C to D. • Edinburgh Road/Bedwin Road intersection with signs from level of service B to C.	• LOS D is still an acceptable level of operation. • This is not significant. Overall the traffic impacts would be minor and of an order that would be expected of any similar development within a major urban area. Accordingly the concern expressed in this submission is misplaced.
4.2.1.2	In addition to the above there are a number of outstanding issues that are required to be addressed in completing a considered review of traffic and parking impacts as detailed on page 5 in the conclusions of the traffic impact assessment report attached to this letter.	See response below.
4.2.1.3	There is no justification provided by the proposal with respect to the traffic impacts detailed above or how they are proposed to be mitigated.	The traffic report finds that overall traffic impacts would be acceptable after proposed road improvements were made.

4.2.2 Traffix - TMAP Review (9 September 2010)

As part of Marrickville Chamber of Commerce's submission, they included an independent review of the TMAP, undertaken by Traffix.

4.2.2.1	More details required regarding the assumed traffic distributions should be provided as there appear to be inconsistencies between additional traffic flows at various intersections.	This is addressed in the first part of this response.
4.2.2.2	Sensitivity required testing regarding the assumed proportional distribution of development traffic, particularly to the north.	Not considered necessary in the light of additional information provided in this report.

4.2.2.3	Consideration required of background traffic growth on the performance of the surrounding road network in order to establish what works are required to ensure satisfactory performance is achieved both now and into the future.	Marrickville is a mature established area and therefore little background traffic growth is likely. In addition, positive transport management measures being implemented by Council will help to offset such growth. Finally, the location of additional retail development in Marrickville that competes with shopping centres outside of Marrickville will serve to contain traffic in Marrickville and hence reduce overall traffic growth.
4.2.2.4	The modelling outputs should be made available for detailed review (ideally the SIDRA files themselves). A copy of dated survey results should also be included as an appendix to the TMAP.	Survey files have been separately provided to the RTA. Summary SIDRA outputs are attached to this report at Appendix C. Dates of the traffic surveys are provided above (see response to Item 3.4.1.9).
4.2.2.5	Clarification required of which improvements are proposed and confirmation that the proposed design of these facilities can physically be provided. As discussed above, there are number of issues with the current design which raise potential safety concerns and/or result in further impacts such as additional loss of on-street parking which have not been assessed;	This is outlined in the Statement of Commitments. On-street parking changes are addressed above in the first part of the report.
4.2.2.6	Detailed traffic assessment of the 'alternative' design needs to be undertaken, particularly as the applicant is unlikely to acquire the land required for the closure of Smidmore Street as assessed by Halcrow.	This is included in this report.

5 Conclusions

This traffic report has assessed the amended scheme for the Marrickville Metro expansion project with Smidmore Street remaining open. In comparison with the earlier scheme, which proposed a partial closure of Smidmore Street, the latest scheme proposes:

- A reduction of about 22% in additional floor area;
- About 190 fewer parking spaces;
- Removal of the connection across Smidmore Street between the car park of the existing centre and the expansion site; and
- Continued use of Smidmore Street for bus circulation.

It is concluded from the analysis that:

- Subject to recommended improvements, in particular the revised improvement schemes for the intersections of Bedwin Road with May Street and Edgeware Road with Alice Street, traffic effects of the proposal would be satisfactory;
- The methodology used to derive the trip distribution is appropriate and provides a reliable assignment of forecast traffic on the local road network;
- The proposed parking provision is appropriate;
- The proposed bicycle parking provision is appropriate and a mechanism for increasing bicycle parking in the future has been identified;
- Proposed internal traffic and loading arrangements would be satisfactory; and
- As for the original scheme, the proposed bus terminus on Edinburgh Road would afford vastly improved conditions for passengers and buses.

The July 2010 TMAP listed a number of improvements to be implemented in conjunction with the development. Two of these improvements have been amended in this report, namely:

- Future traffic signals at the intersection of Victoria Road with Edgeware Road were shown in error and this has been corrected; and

- A Contra Flow cycle lane on Shirlow Road is no longer proposed, instead Saywell and Cadogen Streets are proposed for use by cyclist accessing Sydenham rail station and beyond.

Responses are provided in this report to clarify matters raised in submissions.

Overall it is concluded that subject to the implementation of measures outlined in the TMAP and this report, transport aspects of the proposal would be satisfactory.

Appendix A Development Plans

KEY PLAN

EXISTING NEW

- NEW MAJORS
- COMMUNITY OPPORTUNITY
- KEY PUBLIC DOMAIN OPPORTUNITIES
- SPECIALTY RETAIL
- CIRCULATION PUBLIC
- PARKING & DOCKS
- CONSTRUCTION ABOVE EXISTING
- EXISTING TREE
- TREE TO BE REMOVED
- PROPOSED NEW TREE

Issue	Rev.	Revision Description	Date
	03	PREFERRED PROJECT REPORT	29.10.10
	02	ISSUE FOR PART 3A APPLICATION	16.07.10
	01	ISSUE FOR PART 3A APPLICATION	02.06.10

Project Manager: Bovis Lend Lease Pty. Limited
ABN 97 000 098 162
Level 17, The Forum 203 Pacific Highway
St Leonards NSW 2065

Architect: Lend Lease design
39 The Bond 30 Hickson Road
Millers Point NSW 2000

Urban Planners: URBIS
Ph:+612 8233 9900 Fax:+612 8233 9966
Level 21, 321 Kent Street
Sydney NSW 2000

Landscape Architect: SITE IMAGE
Ph:02 9966 9300 Fax:02 9966 9477
56-60 Botany Street
Alexandria NSW 2015

Client: AMP capital investors

Project: Mecha

Title: PROPOSED GROUND FLOOR PLAN

Scale: 1:500 @ B1, 1:1250@ A3

Drawn	Checked	Coordinated	Approved	Date
LY	EI	EI	GJ	24.05.10

Project Number : Drawing Number: 160496:EA006 | Issue: 03

B1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

If this drawing is printed or plotted at a size other than B1- DO NOT SCALE DIMENSIONS FROM DRAWING.
Always take figured dimensions in preference to scaling.

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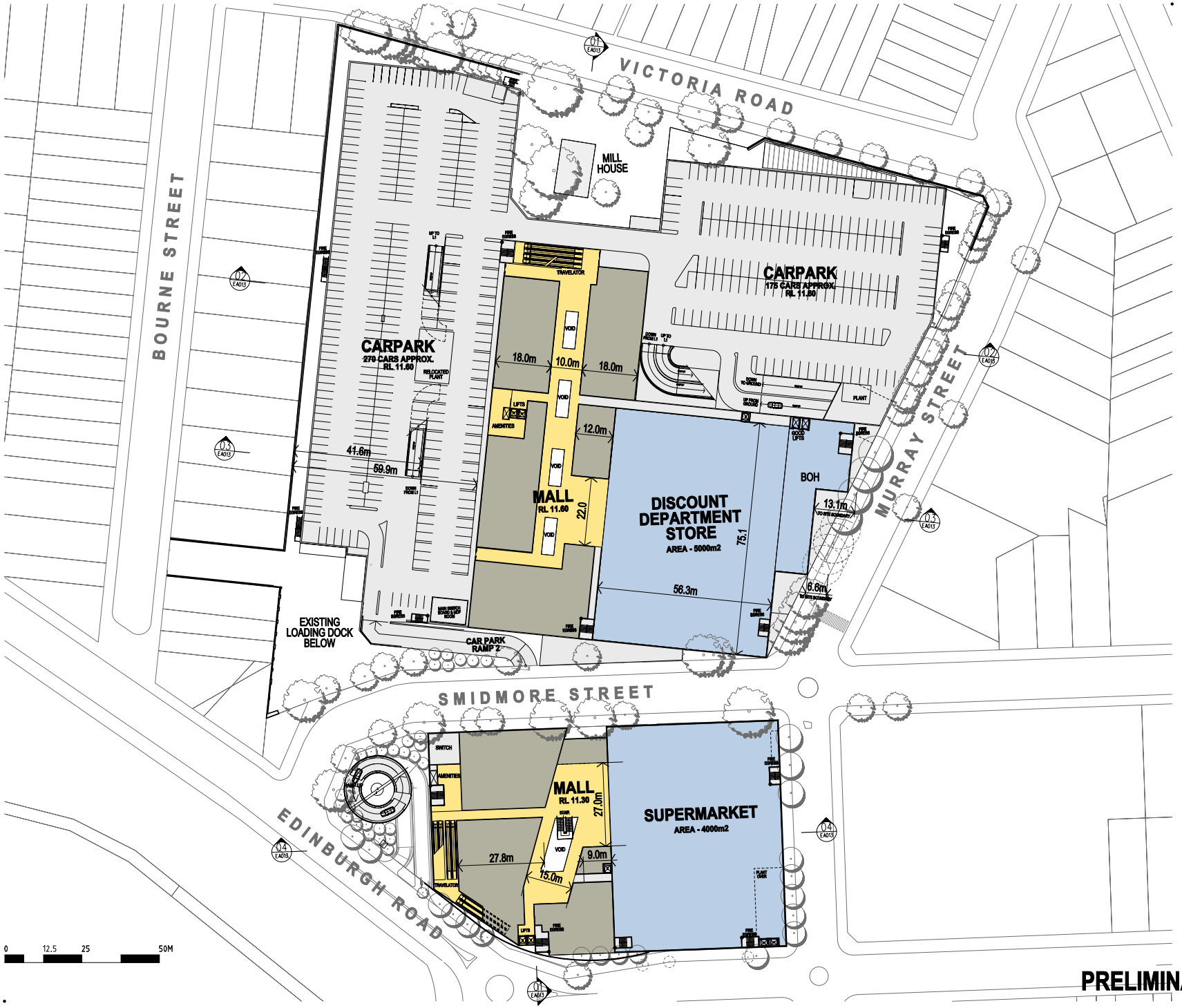

KEY PLAN

EXISTING NEW

NEW MAJORS
COMMUNITY OPPORTUNITY
KEY PUBLIC DOMAIN OPPORTUNITIES
SPECIALTY RETAIL
CIRCULATION PUBLIC
PARKING & DOCKS
CONSTRUCTION ABOVE EXISTING

EXISTING TREE
TREE TO BE REMOVED
PROPOSED NEW TREE

Issue	Rev.	Revision Description	Date
03		PREFERRED PROJECT REPORT	29.10.10
02		ISSUE FOR PART 3A APPLICATION	16.07.10
01		ISSUE FOR PART 3A APPLICATION	02.06.10

Project Manager: Bovis Lend Lease Pty. Limited
ABN 97 000 098 162
97 The Bond 98 Nielsen Road
Millers Point NSW 2000

Architect: Lend Lease design
97 The Bond 98 Nielsen Road
Millers Point NSW 2000

Urban Planners: URBIS
Ph:+612 8233 9000 Fax:+612 8233 9001
Level 21, 321 Kent Street
Sydney NSW 2000

Landscape Architect: SITE IMAGE
Ph:02 9906 3966 Fax:02 9906 2677
24-48 Denison Street
Alexandria NSW 2015

Client: AMP capital investors

Project: Mella Shopping Centre Marrickville

Title: PROPOSED LEVEL 1 PLAN

Scale: 1:500 @ B1, 1:1250@ A3

Drawn	Checked	Coordinated	Approved	Date
LY	EI	EI	GJ	24.05.10

Project Number : Drawing Number: 160496:EA007 | Issue: 03

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KEY PLAN

EXISTING NEW

NEW MAJORS
COMMUNITY OPPORTUNITY
KEY PUBLIC DOMAIN OPPORTUNITIES
SPECIALITY RETAIL
CIRCULATION PUBLIC
PARKING & DOCKS
CONSTRUCTION ABOVE EXISTING
EXISTING TREE
TREE TO BE REMOVED
PROPOSED NEW TREE

Issue	Rev.	Revision Description	Date
03		PREFERRED PROJECT REPORT	29.10.10
02		ISSUE FOR PART 3A APPLICATION	16.07.10
01		ISSUE FOR PART 3A APPLICATION	02.06.10

Project Manager
Bovis Lend Lease Pty. Limited
ABN 97 000 098 162
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Millers Point NSW 2000

Architect
Lend Lease design
97 The Bond 98 Hickson Road
Millers Point NSW 2000

Urban Planners
URBIS
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Level 21, 321 Kent Street
Sydney NSW 2000

Landscape Architect
SITE IMAGE
Ph:02 9966 9300 Fax:02 9966 9477
56-60 Botany Street
Alexandria NSW 2015

Client
AMP capital INVESTORS

Project
Mella
CONVENIENCE CENTRE
MARRICKVILLE

Title
PROPOSED
LEVEL 2

Scale 1:500 @ B1, 1:1250@ A3

Drawn	Checked	Coordinated	Approved	Date
LY	EI	EI	GJ	24.05.10

Project Number : Drawing Number 160496:EA008 | Issue 03

PRELIMINARY

B1
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Always take figured dimensions in preference to scaling.

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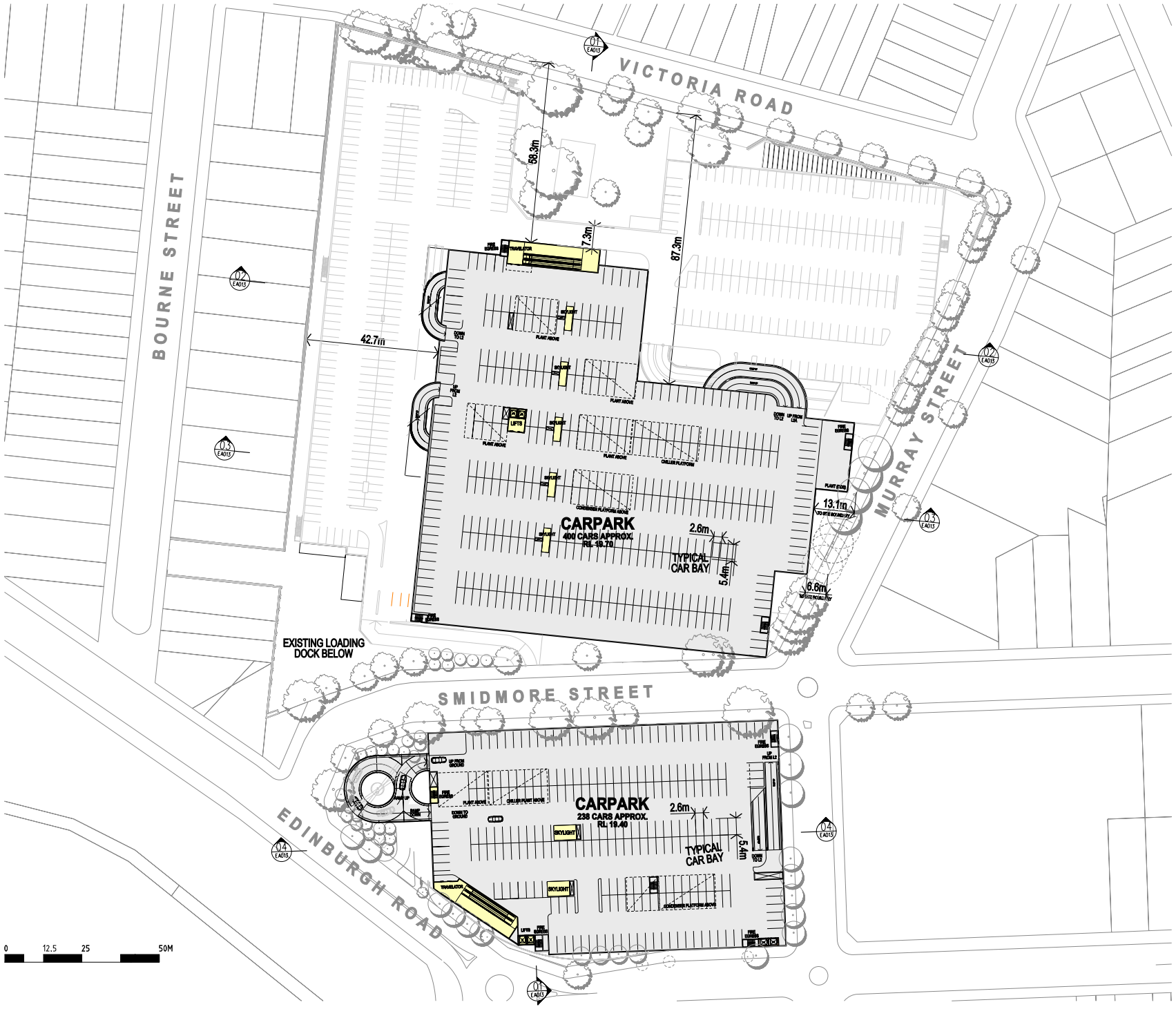

KEY PLAN

EXISTING / NEW

- NEW MAJORS
- COMMUNITY OPPORTUNITY
- KEY PUBLIC DOMAIN OPPORTUNITIES
- SPECIALITY RETAIL
- CIRCULATION PUBLIC
- PARKING & DOCKS
- CONSTRUCTION ABOVE EXISTING
- EXISTING TREE
- TREE TO BE REMOVED
- PROPOSED NEW TREE

Issue	Rev.	Revision Description	Date
03		PREFERRED PROJECT REPORT	29.10.10
02		ISSUE FOR PART 3A APPLICATION	16.07.10
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Project Manager
Bovis Lend Lease Pty. Limited
ABN 97 000 098 162
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Lend Lease design
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Sydney NSW 2000

Landscape Architect
SITE IMAGE
Ph:02 9906 3566 Fax:02 9906 2677
56-60 Botany Street
Alexandria NSW 2015

Client
AMP capital INVESTORS

Project
Melrose Gardens MARRICKVILLE

Title
PROPOSED
ROOFTOP CAR PARK
LEVEL 2A

Scale	1:500 @ B1, 1:1250@ A3			
Drawn	Checked	Coordinated	Approved	Date
LY	EI	EI	GJ	24.05.10

Project Number : Drawing Number | Issue
160496:EA009 | 03

B1
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If this drawing is printed or plotted at a size other than B1- DO NOT SCALE DIMENSIONS FROM DRAWING.
Always take figured dimensions in preference to scaling.

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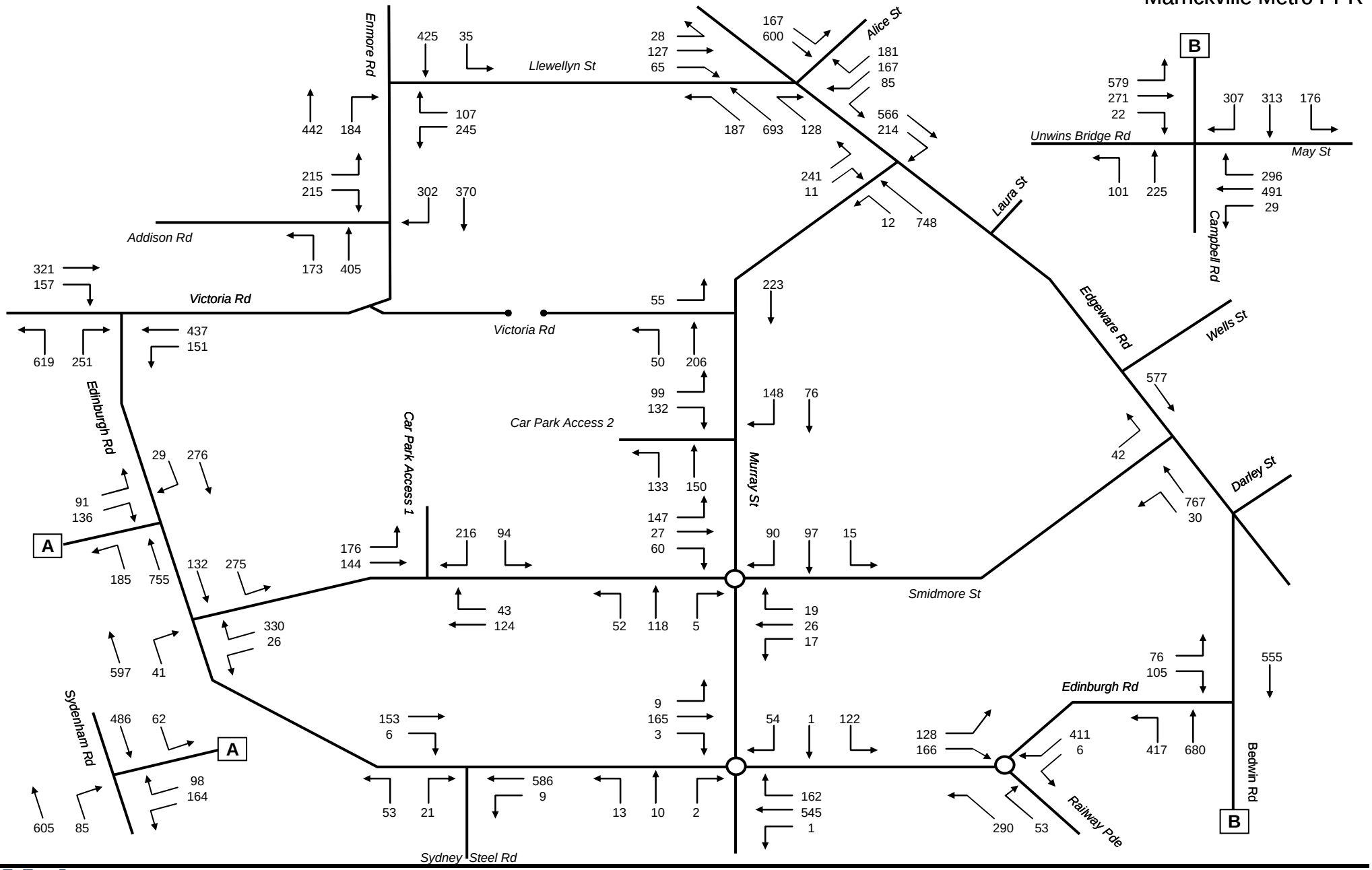
Appendix B Traffic Flows Diagrams

2010 SURVEYED TRAFFIC FLOWS, THURSDAY PM

Marrickville Metro PPR



LOCAL COMMITTED DEVELOPMENT TRAFFIC FLOWS, THURSDAY PM

Marrickville Metro PPR

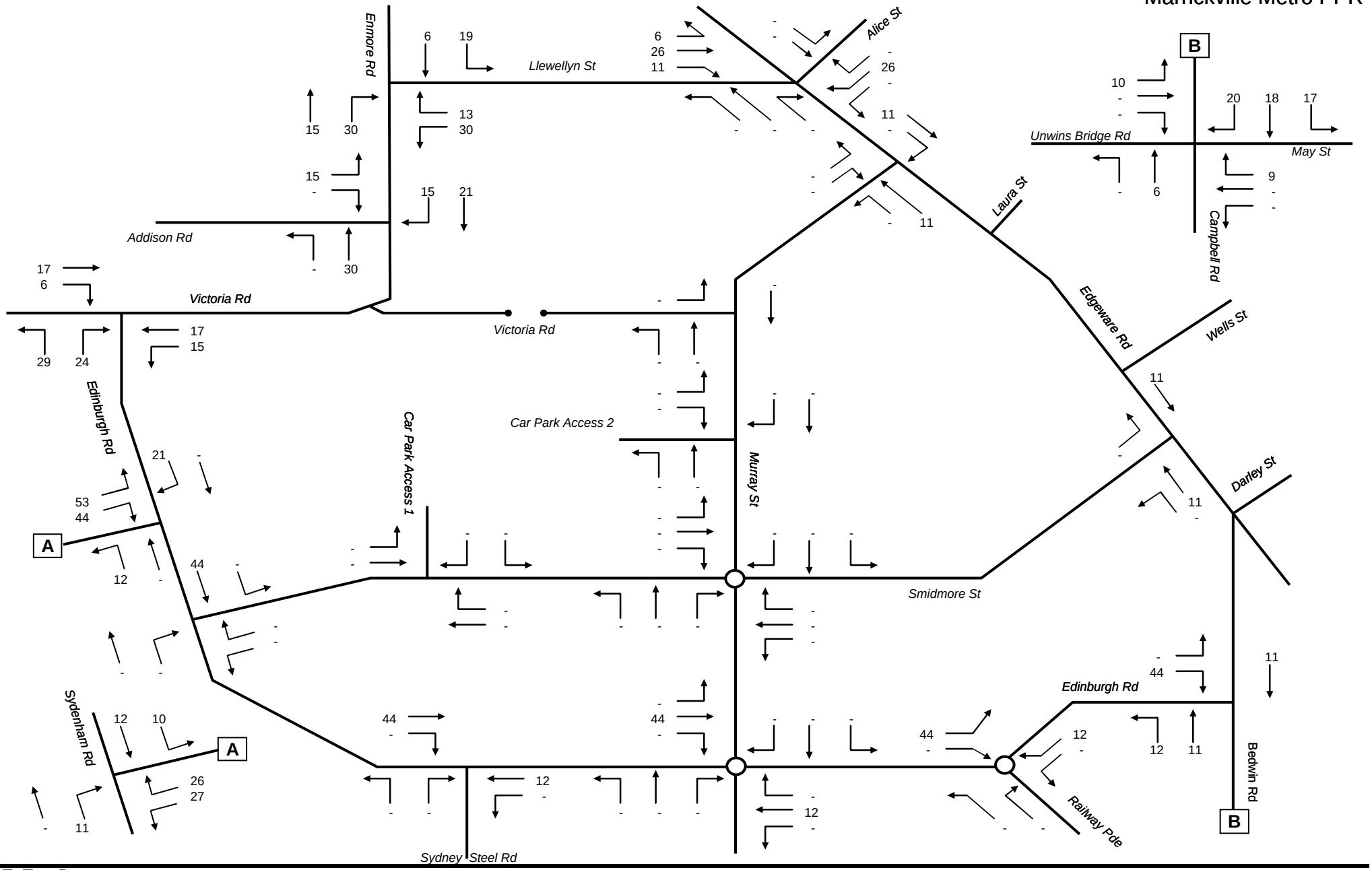


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Figure B2

X:\CTLRGW - Marrickville Metro\67 - Calculations\CTLRGWx10 Network_v3.xls - 2/11/2010

INTERCEPTED / DIVERTED TRIPS FROM VICTORIA RD-ENMORE RD AND EDGEWARE RD, THURSDAY PM

Marrickville Metro PPR

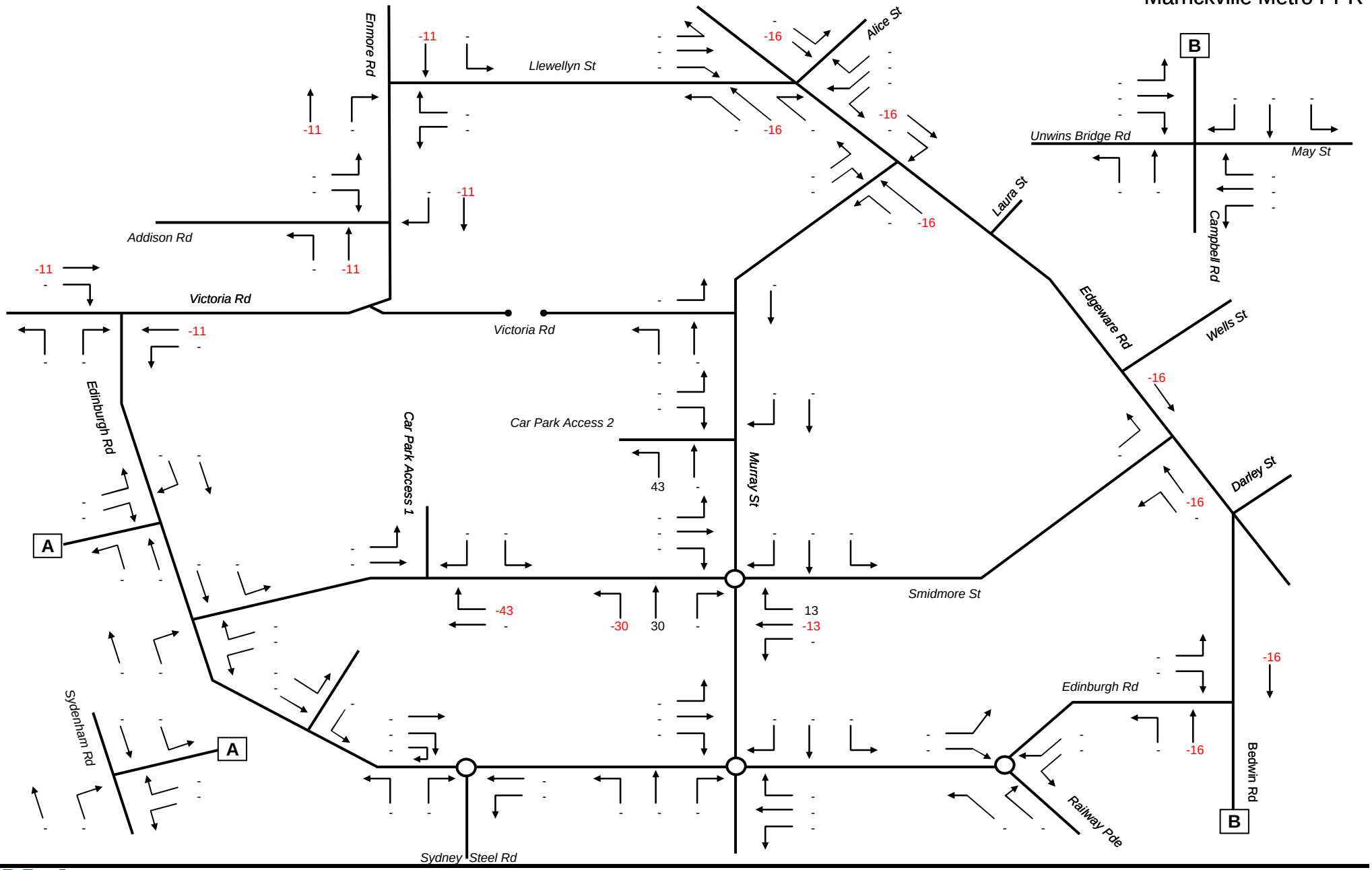

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Figure B3

X:\CTLRGW - Marrickville Metro\67 - Calculations\CTLRGWx10 Network_v3.xls - 2/11/2010

LOCAL TRIP DISTRIBUTION FOR NEW TRIPS, THURSDAY PM

Marrickville Metro PPR

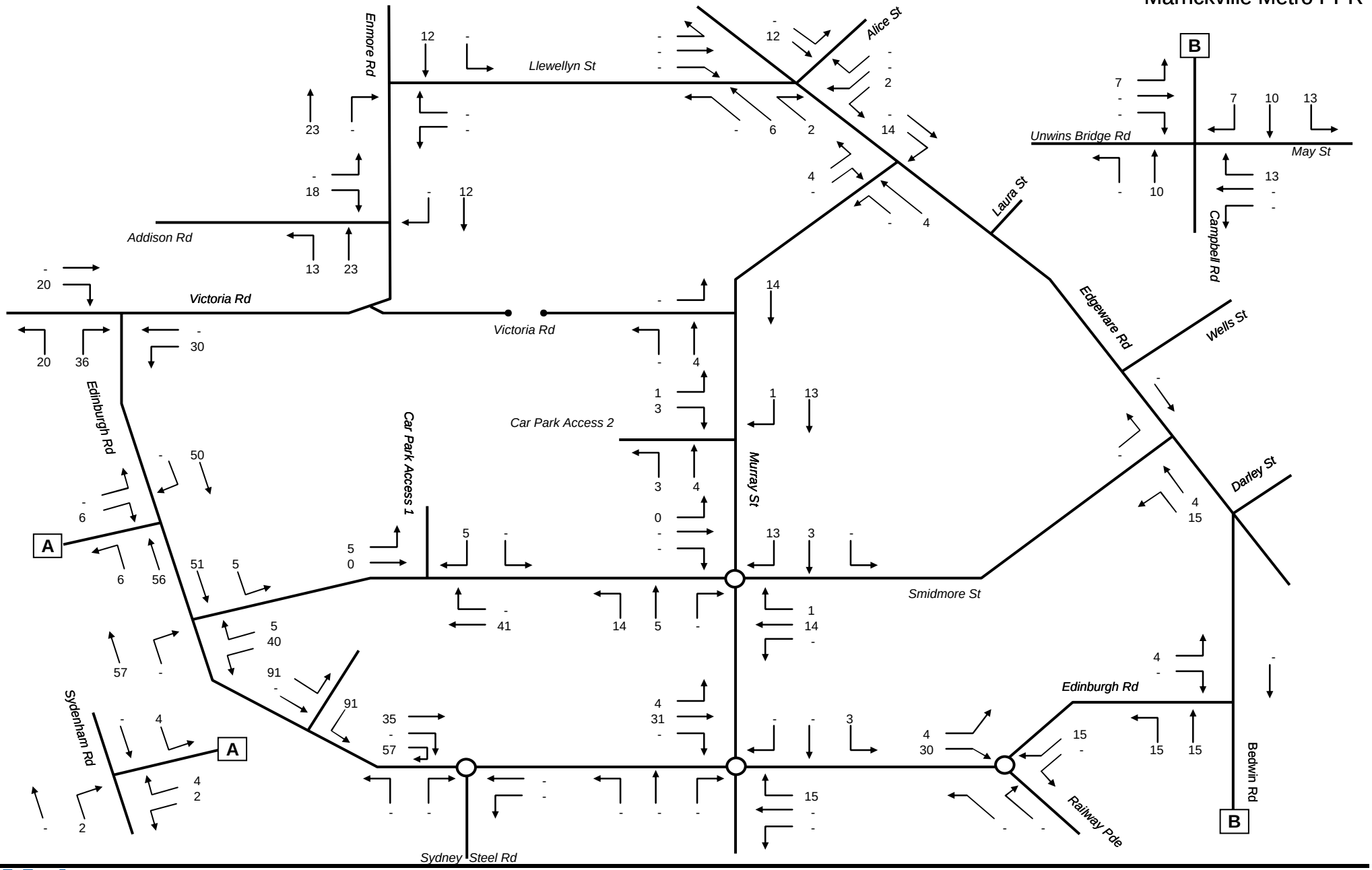

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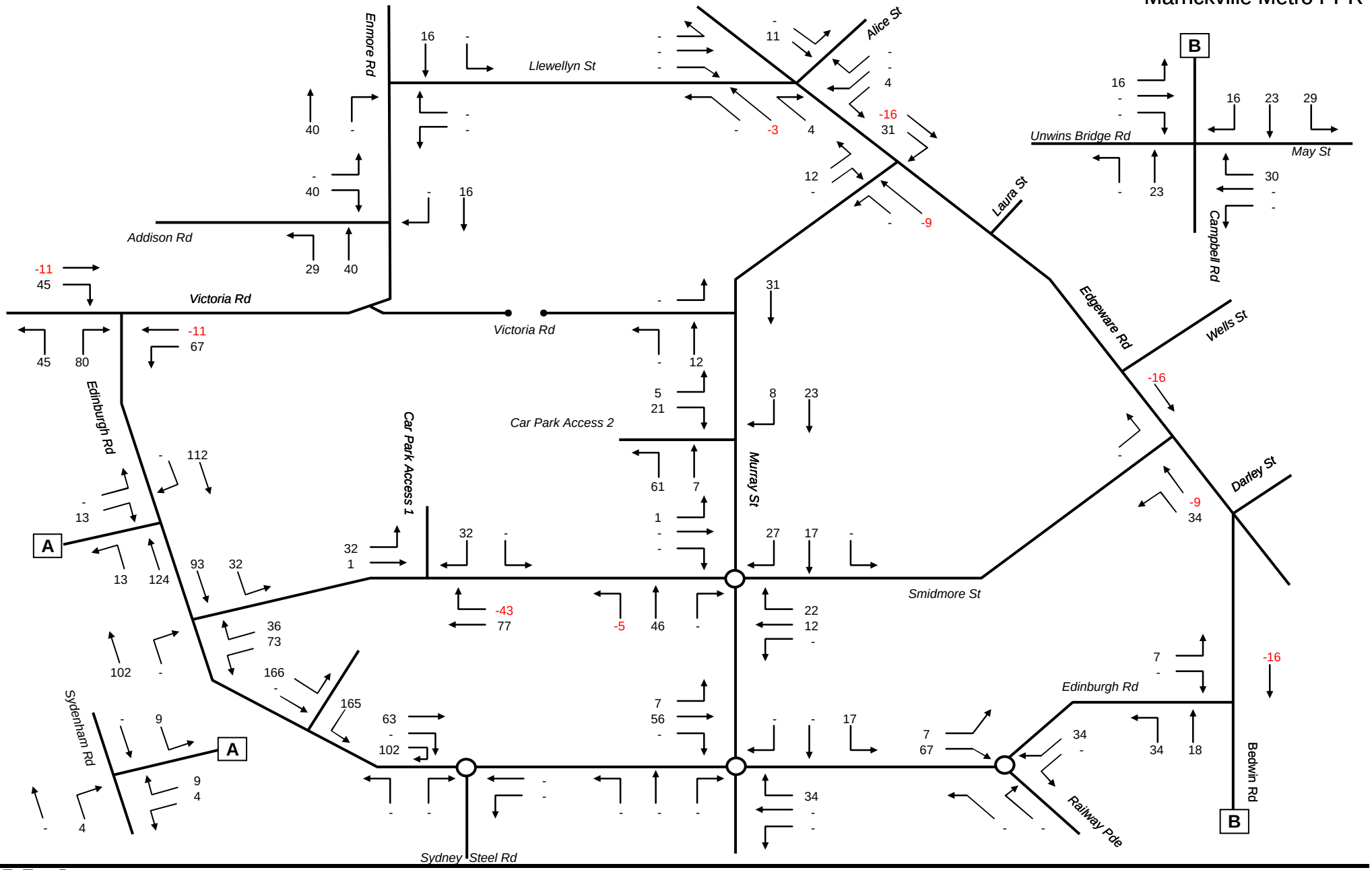
Figure B4

X:\CTLRGW - Marrickville Metro\67 - Calculations\CTLRGWx10 Network_v3.xls - 2/11/2010

FORECASTED NETT CHANGE IN TRAFFIC FLOWS, THURSDAY PM

Marrickville Metro PPR



2010 SURVEYED TRAFFIC FLOWS, SATURDAY

Marrickville Metro PPR

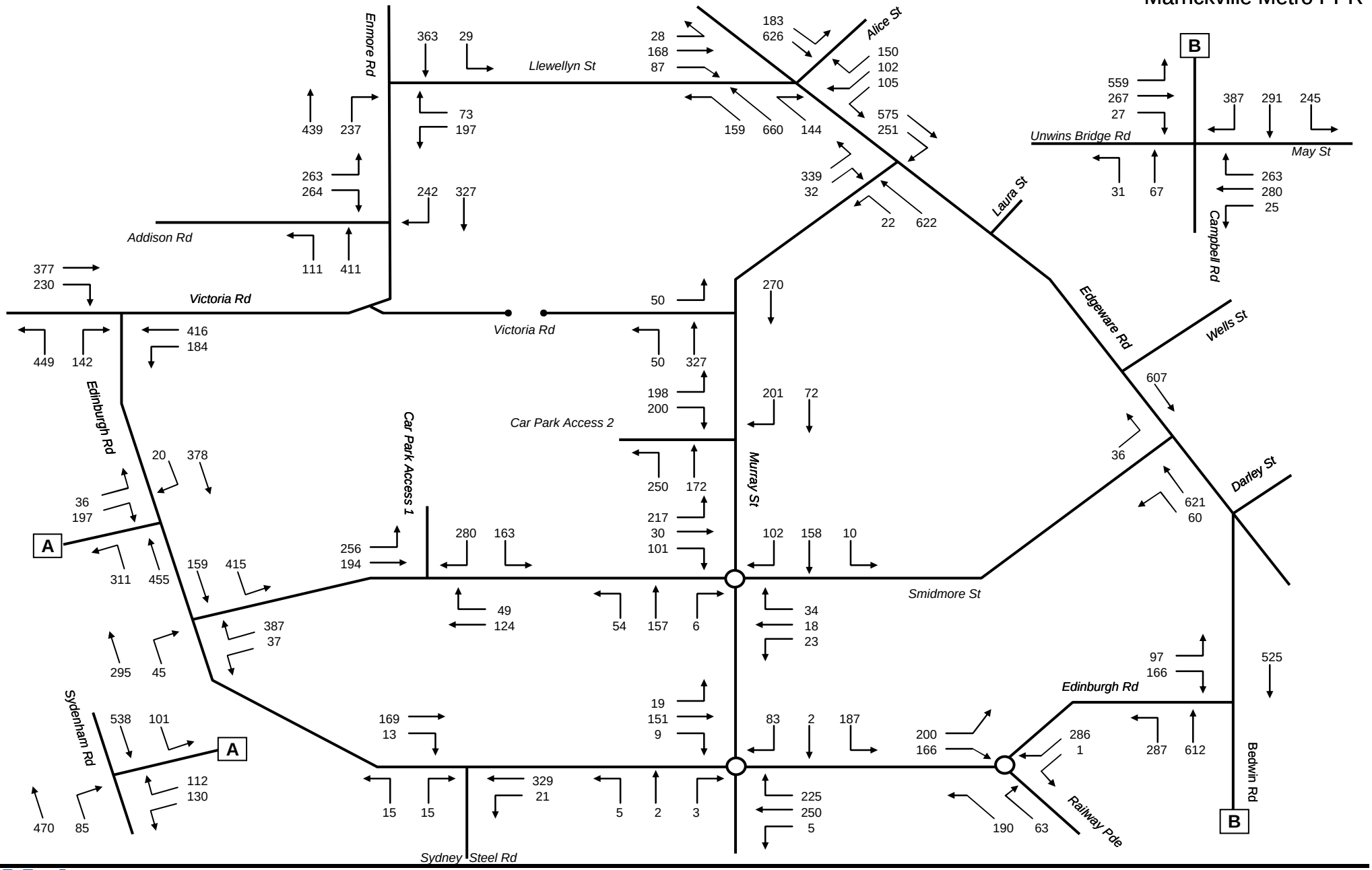


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Figure B6

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LOCAL COMMITTED DEVELOPMENT TRAFFIC FLOWS, SATURDAY

Marrickville Metro PPR

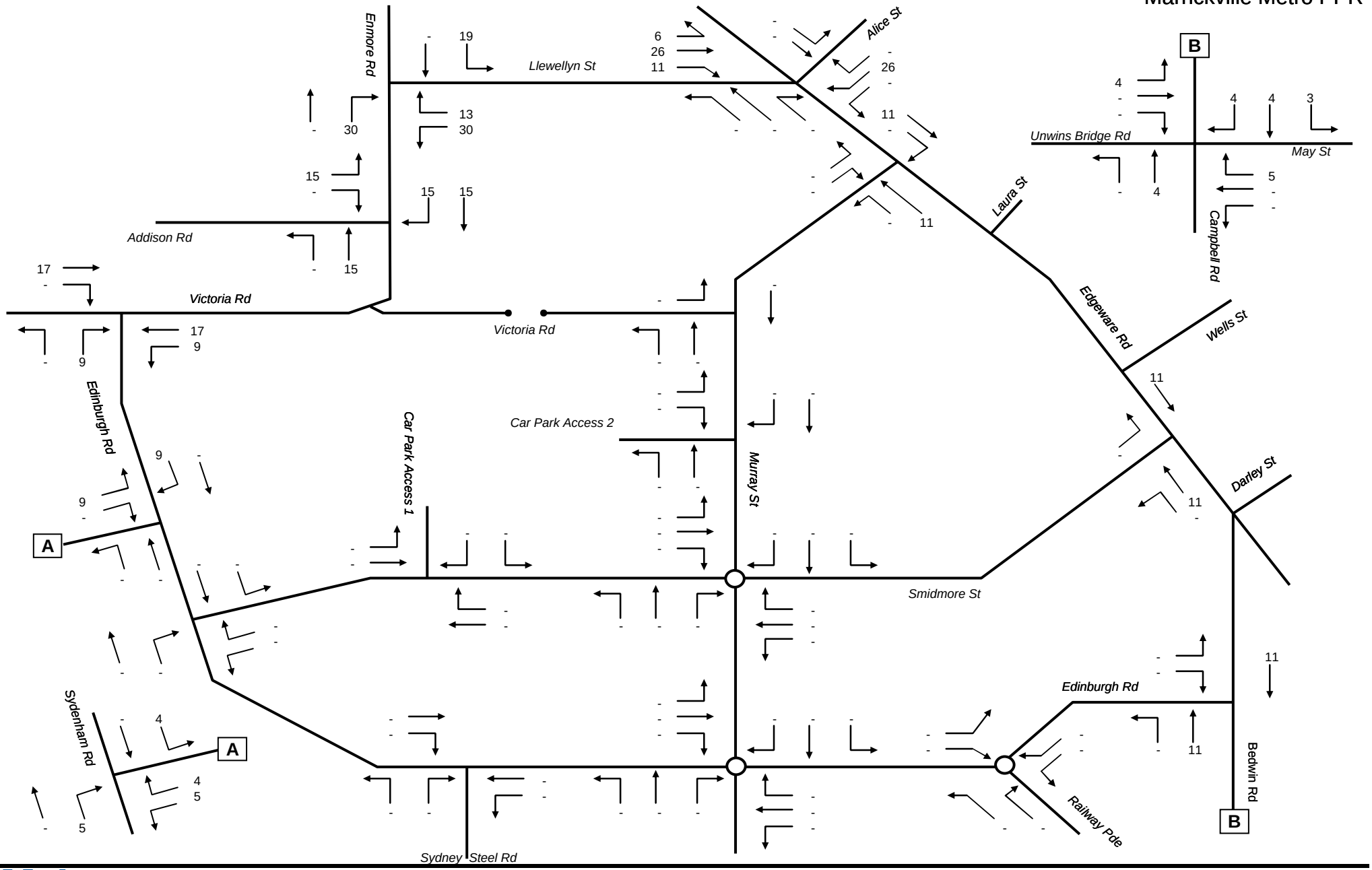

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Figure B7

X:\CTLRGW - Marrickville Metro\67 - Calculations\CTLRGWx10 Network_v3.xls - 2/11/2010

INTERCEPTED / DIVERTED TRIPS FROM VICTORIA RD-ENMORE RD AND EDGEWARE RD, SATURDAY

Marrickville Metro PPR

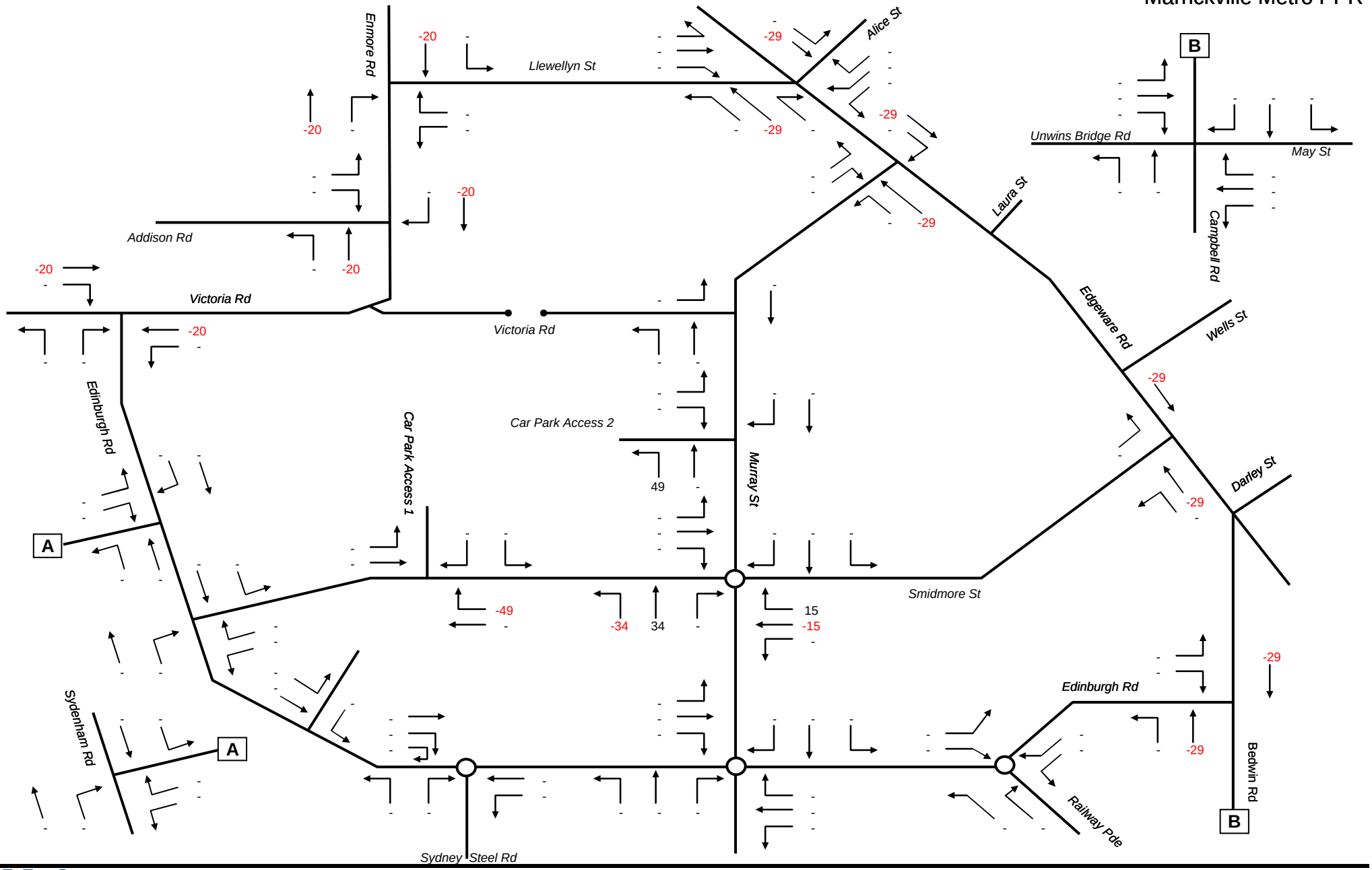

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Figure B8

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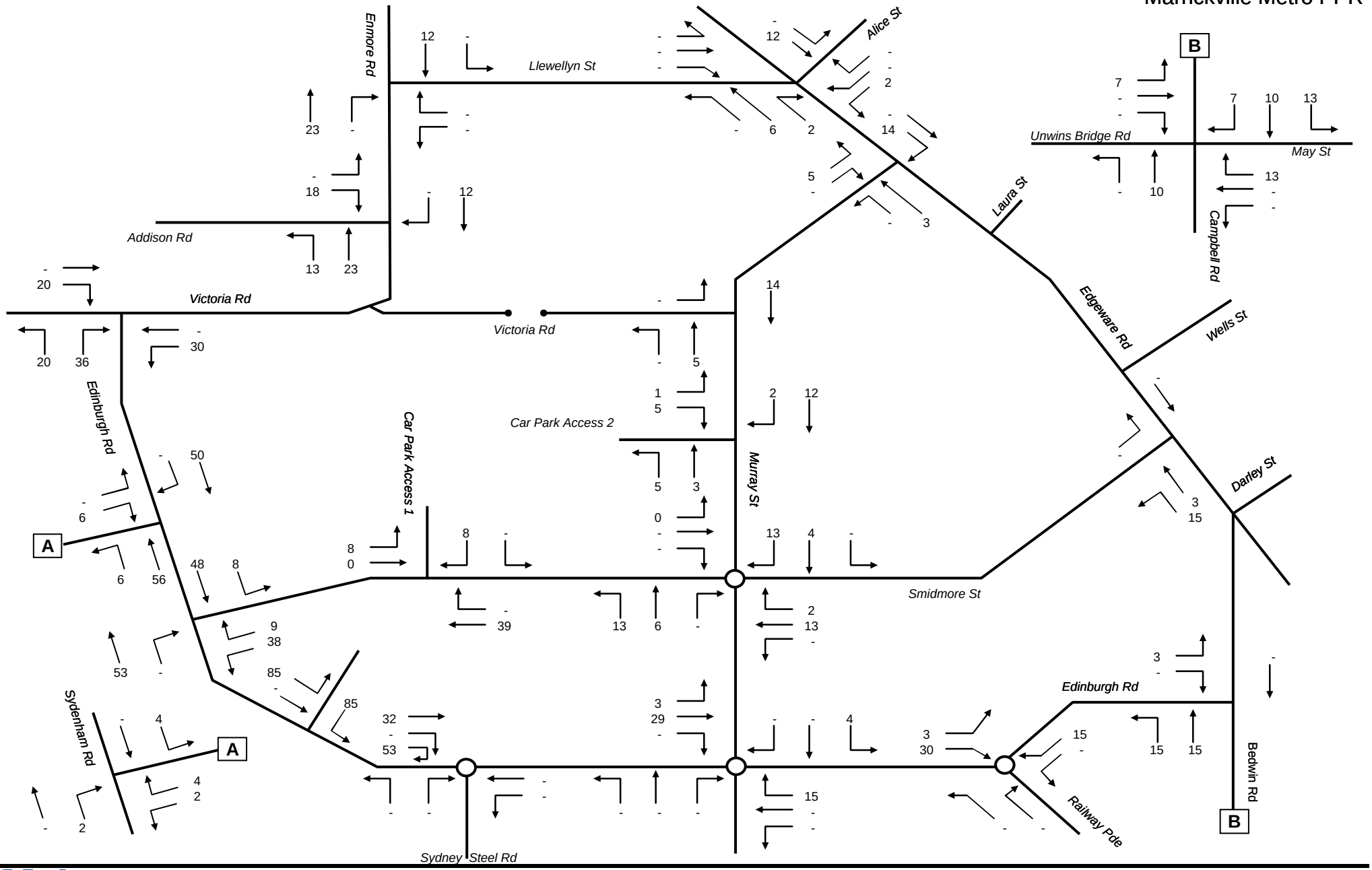
LOCAL TRIP DISTRIBUTION FOR NEW TRIPS, SATURDAY

Marrickville Metro PPR



FORECASTED NETT CHANGE IN TRAFFIC FLOWS, SATURDAY

Marrickville Metro PPR

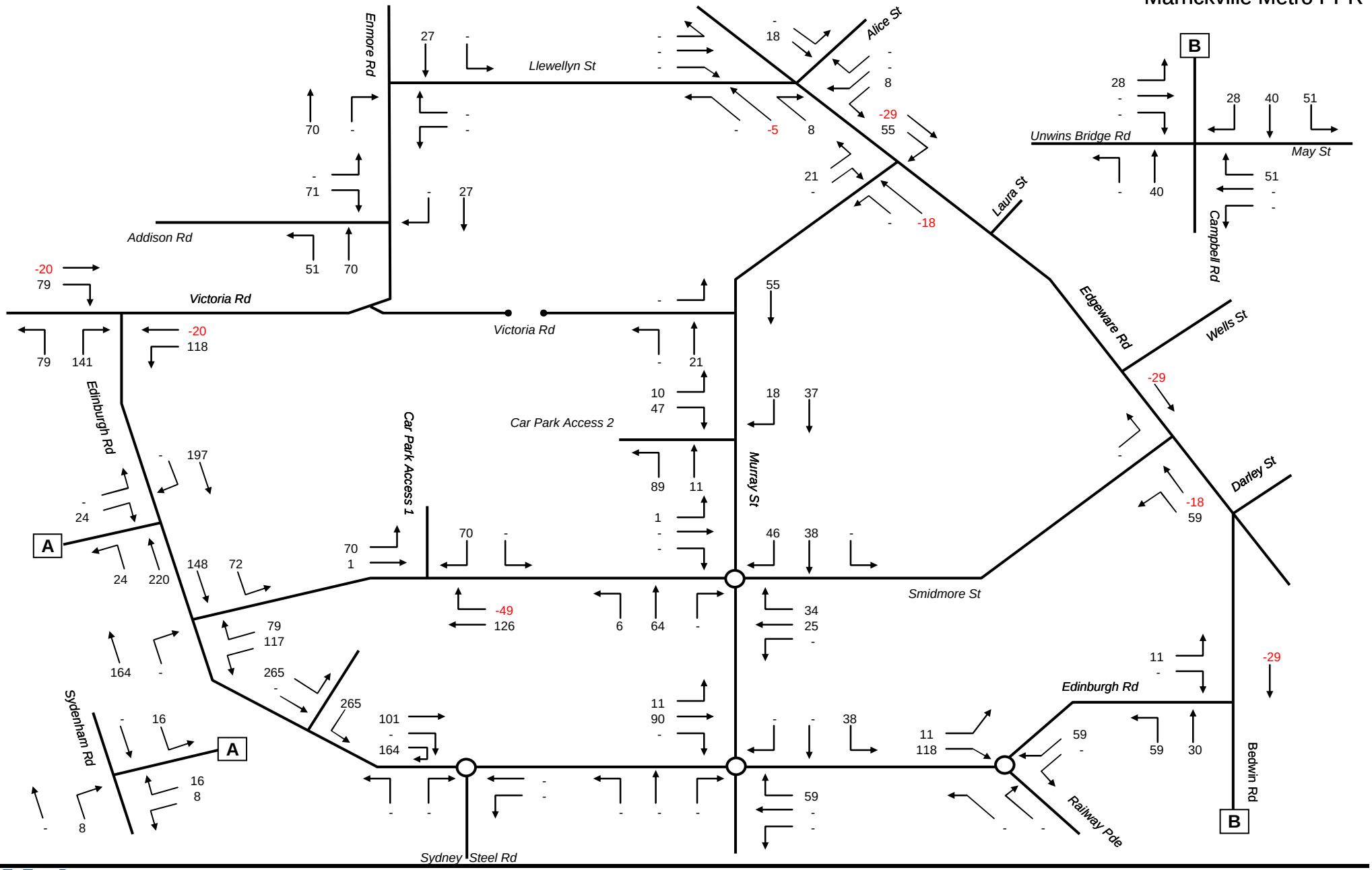


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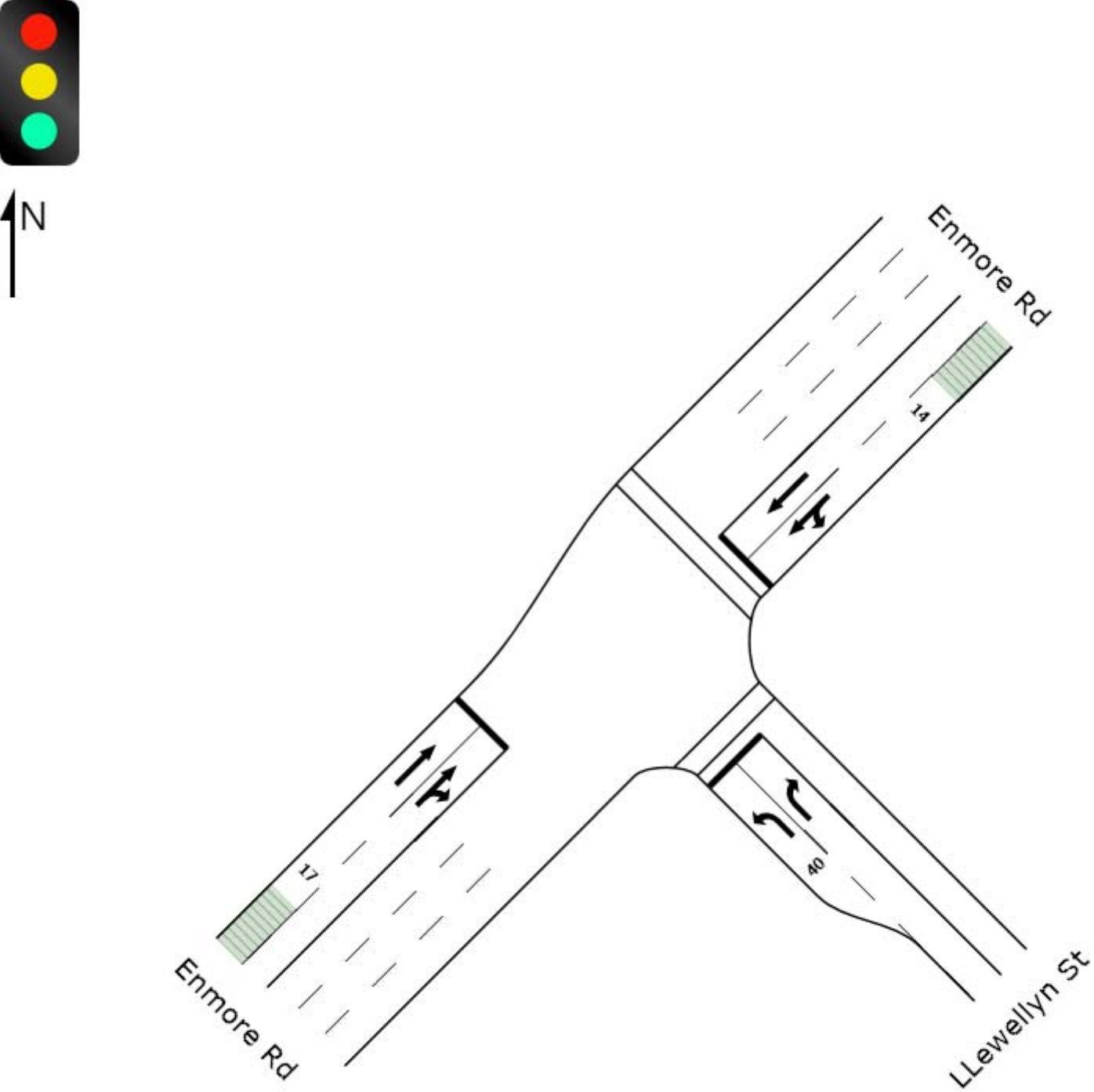
Figure B10

X:\CTLRGW - Marrickville Metro\67 - Calculations\CTLRGWx10 Network_v3.xls - 2/11/2010

Appendix C SIDRA Results


N
Enmore Rd
14
17
Enmore Rd
40
LLewellyn St

LANE SUMMARY

Site: Enmore_Llewellyn_Thu 2010

2010 Thursday PM
Enmore St / LLewellyn St

Signals - Fixed Time Cycle Time = 90 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: LLewellyn St																
Lane 1	258	0	0	258	0.0	376[1]	0.686	100	22.2	LOS B	8.1	56.6	40	Turn Bay	0.0	19.3
Lane 2	0	0	113	113	0.0	413	0.273	100	39.0	LOS C	5.6	39.4	200	–	0.0	0.0
Approach	258	0	113	371	0.0		0.686		27.3	LOS B	8.1	56.6				
North East: Enmore Rd																
Lane 1	37	33	0	69	2.5	102[1]	0.683	100	32.4	LOS C	3.5	25.0	14	Parking	0.0	27.0
Lane 2	0	415	0	415	5.4	607	0.683	100	28.8	LOS C	17.2	126.0	500	–	0.0	0.0
Approach	37	447	0	484	5.0		0.683		29.4	LOS C	17.2	126.0				
South West: Enmore Rd																
Lane 1	0	151	0	151	2.7	224[1]	0.675	100	15.1	LOS B	4.4	31.4	17	Parking	0.0	31.5
Lane 2	0	314	194	508	1.7	752	0.675	100	14.9	LOS B	12.8	90.8	90	–	0.0	5.3
Approach	0	465	194	659	1.9		0.675		14.9	LOS B	12.8	90.8				
Intersection				1514	2.4		0.686		22.6	LOS B	17.2	126.0				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS C. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect

PHASING SUMMARY

2010 Thursday PM
Enmore St / LLewellyn St

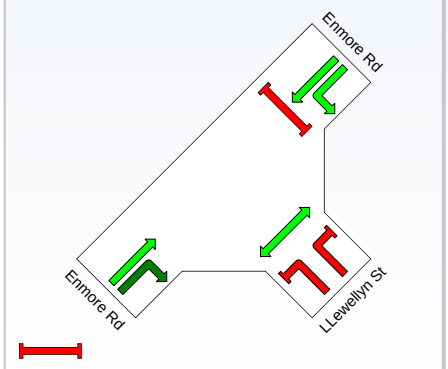
Signals - Fixed Time Cycle Time = 90 seconds

Cycle Time Option: **User-specified Cycle Time**
Phase times determined by the program
Sequence: Two-Phase (phase reduction applied)
Input Sequence: A, B, C, D
Output Sequence: A, C, D

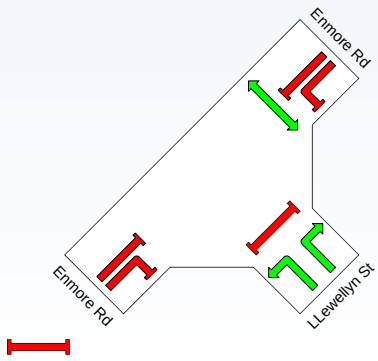
Phase Timing Results

Phase	A	C	D
Green Time (sec)	29	20	23
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	35	26	29
Phase Split	39 %	29 %	32 %

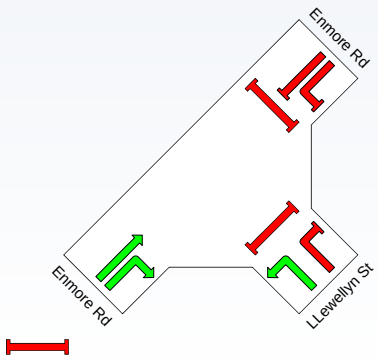
Phase A



Phase C



Phase D



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red
Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

LANE SUMMARY

Site: Enmore_Llewellyn_Sat 2010

2010 Saturday
Enmore St / LLewellyn St
Signals - Fixed Time Cycle Time = 90 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: LLewellyn St																
Lane 1	207	0	0	207	0.5	407[1]	0.510	100	16.3	LOS B	5.6	39.5	40	Turn Bay	0.0	4.8
Lane 2	0	0	77	77	0.0	392	0.196	100	39.2	LOS C	4.0	28.0	200	–	0.0	0.0
Approach	207	0	77	284	0.4		0.510		22.5	LOS B	5.6	39.5				
North East: Enmore Rd																
Lane 1	31	33	0	63	1.7	96[1]	0.659	100	33.6	LOS C	3.3	23.4	14	Parking	0.0	22.3
Lane 2	0	349	0	349	3.3	530	0.659	100	31.4	LOS C	15.2	109.1	500	–	0.0	0.0
Approach	31	382	0	413	3.1		0.659		31.7	LOS C	15.2	109.1				
South West: Enmore Rd																
Lane 1	0	156	0	156	2.5	231[1]	0.676	100	14.7	LOS B	4.4	31.5	17	Parking	0.0	31.7
Lane 2	0	306	249	556	1.4	823	0.676	100	14.5	LOS B	13.7	97.1	90	–	0.0	8.3
Approach	0	462	249	712	1.6		0.676		14.6	LOS B	13.7	97.1				
Intersection				1408	1.8		0.676		21.2	LOS B	15.2	109.1				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS C. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect

SIDRA INTERSECTION

PHASING SUMMARY

Site: Enmore_Llewellyn_Sat 2010

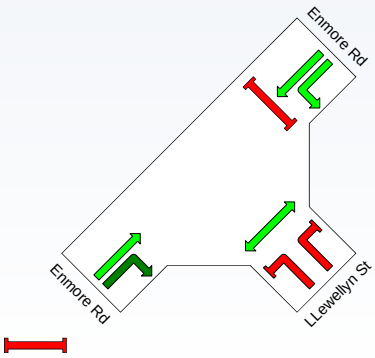
2010 Saturday
Enmore St / LLewellyn St
Signals - Fixed Time Cycle Time = 90 seconds

Cycle Time Option: **User-specified Cycle Time**
Phase times determined by the program
Sequence: Two-Phase (phase reduction applied)
Input Sequence: A, B, C, D
Output Sequence: A, C, D

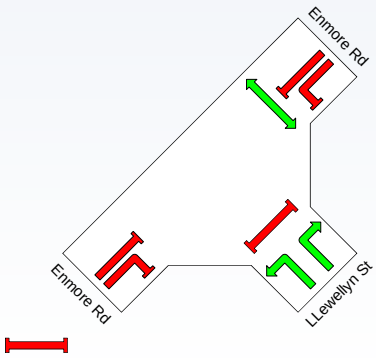
Phase Timing Results

Phase	A	C	D
Green Time (sec)	25	19	28
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	31	25	34
Phase Split	34 %	28 %	38 %

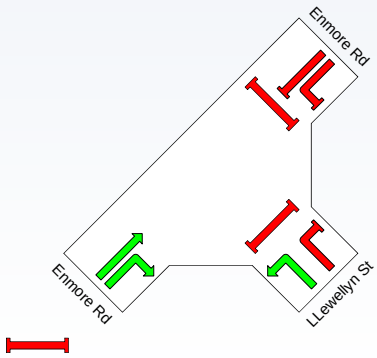
Phase A



Phase C



Phase D



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red
Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

LANE SUMMARY

Site: Enmore_Llewellyn_Thu FUTURE

Future Thursday PM
Enmore St / LLewellyn St
Signals - Fixed Time Cycle Time = 90 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: LLewellyn St																
Lane 1	289	0	0	289	0.0	383[1]	0.756	100	27.4	LOS B	9.8	68.4	40	Turn Bay	0.0	36.8
Lane 2	0	0	126	126	0.0	392	0.322	100	40.3	LOS C	6.3	44.4	200	–	0.0	0.0
Approach	289	0	126	416	0.0		0.756		31.3	LOS C	9.8	68.4				
North East: Enmore Rd																
Lane 1	57	19	0	76	1.3	101[1]	0.756	100	39.5	LOS C	4.1	29.3	14	Parking	0.0	41.3
Lane 2	0	444	0	444	5.2	587	0.756	100	32.2	LOS C	19.5	142.4	500	–	0.0	0.0
Approach	57	463	0	520	4.7		0.756		33.3	LOS C	19.5	142.4				
South West: Enmore Rd																
Lane 1	0	175	0	175	2.5	231[1]	0.759	100	19.0[8]	LOS B[8]	5.3[8]	37.9[8]	17	Parking	0.0	50.1
Lane 2	0	334	225	560	1.5	738	0.759	100	20.5	LOS B	16.4	116.6	90	–	0.0	22.1
Approach	0	509	225	735	1.7		0.759		20.1	LOS B	16.4	116.6				
Intersection				1671	2.2		0.759		27.0	LOS B	19.5	142.4				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS C. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

PHASING SUMMARY

Site: Enmore_Llewellyn_Thu FUTURE

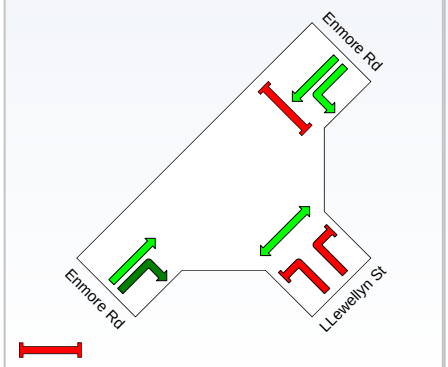
Future Thursday PM
Enmore St / LLewellyn St
Signals - Fixed Time Cycle Time = 90 seconds

Cycle Time Option: **User-specified Cycle Time**
Phase times determined by the program
Sequence: Two-Phase (phase reduction applied)
Input Sequence: A, B, C, D
Output Sequence: A, C, D

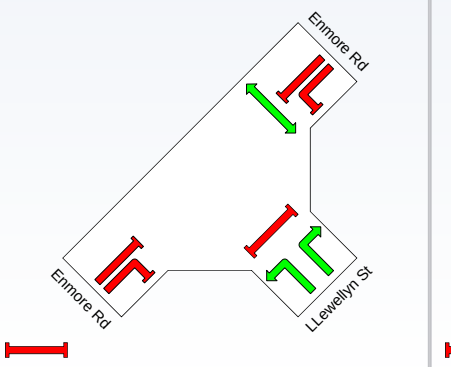
Phase Timing Results

Phase	A	C	D
Green Time (sec)	28	19	25
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	34	25	31
Phase Split	38 %	28 %	34 %

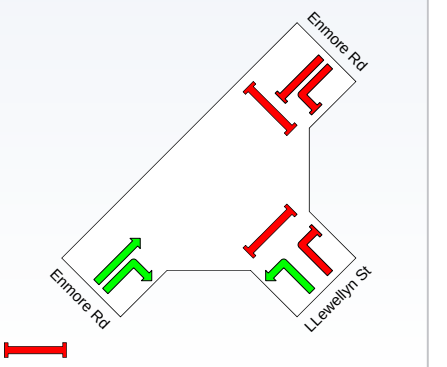
Phase A

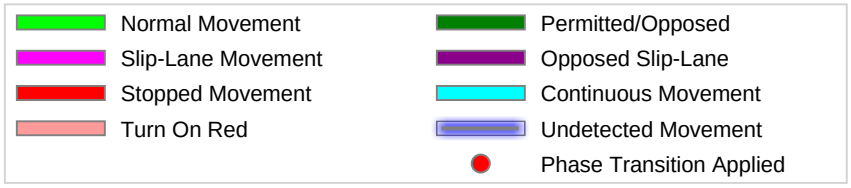


Phase C



Phase D





LANE SUMMARY

Future Saturday
Enmore St / LLewellyn St
Signals - Fixed Time Cycle Time = 90 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: LLewellyn St																
Lane 1	239	0	0	239	0.4	425[1]	0.562	100	15.9	LOS B	6.2	43.2	40	Turn Bay	0.0	7.0
Lane 2	0	0	91	91	0.0	392	0.231	100	39.5	LOS C	4.7	32.6	200	–	0.0	0.0
Approach	239	0	91	329	0.3		0.562		22.4	LOS B	6.2	43.2				
North East: Enmore Rd																
Lane 1	51	23	0	74	1.0	93[1]	0.792	100	44.9	LOS D	4.3	30.7	14	Parking	0.0	46.0
Lane 2	0	387	0	387	3.1	489	0.792	100	37.7	LOS C	18.4	131.8	500	–	0.0	0.0
Approach	51	411	0	461	2.7		0.792		38.8	LOS C	18.4	131.8				
South West: Enmore Rd																
Lane 1	0	186	0	186	2.2	231[1]	0.803	100	18.5[8]	LOS B[8]	5.3[8]	37.9[8]	17	Parking	0.0	50.1
Lane 2	0	350	281	631	1.2	786	0.803	100	25.2	LOS B	22.0	155.4	90	–	0.0	51.7
Approach	0	536	281	817	1.4		0.803		23.6	LOS B	22.0	155.4				
Intersection				1607	1.6		0.803		27.7	LOS B	22.0	155.4				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS D. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

PHASING SUMMARY

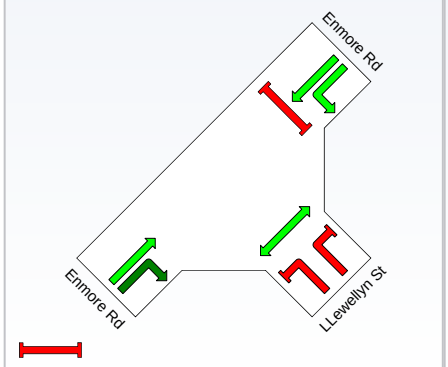
Future Saturday
Enmore St / LLewellyn St
Signals - Fixed Time Cycle Time = 90 seconds

Cycle Time Option: **User-specified Cycle Time**
Phase times determined by the program
Sequence: Two-Phase (phase reduction applied)
Input Sequence: A, B, C, D
Output Sequence: A, C, D

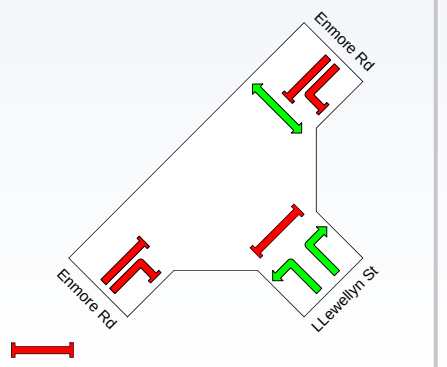
Phase Timing Results

Phase	A	C	D
Green Time (sec)	23	19	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	29	25	36
Phase Split	32 %	28 %	40 %

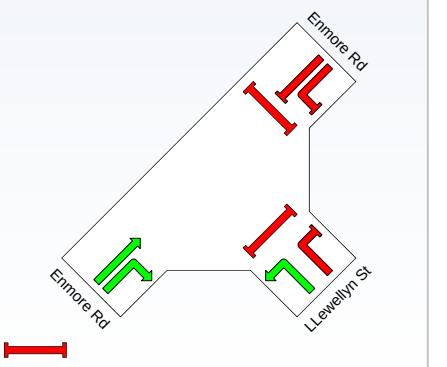
Phase A

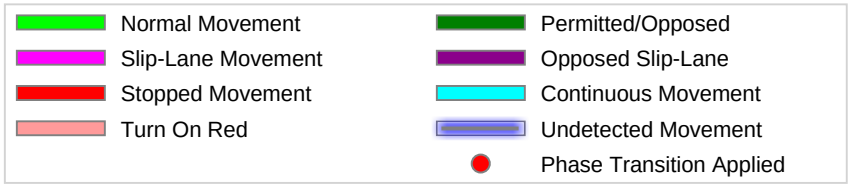


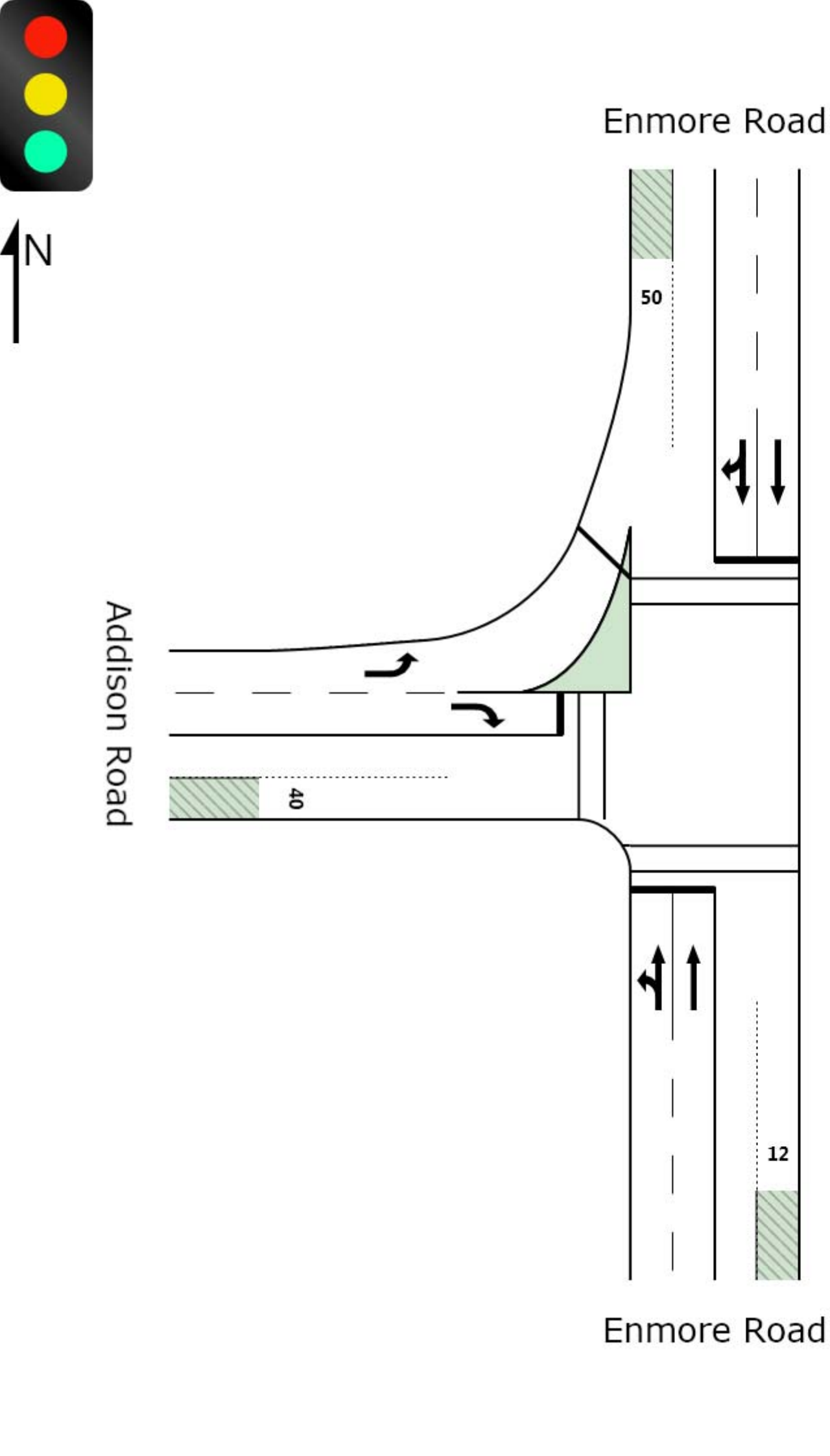
Phase C



Phase D






Enmore Road
N
50
Addison Road
40
12
Enmore Road

LANE SUMMARY

Site: Addison_Enmore Thu 2010

2010 Thursday PM
Addison Rd/Enmore Rd
Signals - Fixed Time Cycle Time = 70 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Enmore Road																
Lane 1	182	0	0	182	1.7	498	0.366	45[5]	31.0	LOS C	6.7	47.9	500	–	0.0	0.0
Lane 2	0	426	0	426	2.2	522	0.817	100	31.1	LOS C	16.8	119.8	500	–	0.0	0.0
Approach	182	426	0	608	2.1		0.817		31.0	LOS C	16.8	119.8				
North: Enmore Road																
Lane 1	0	187	0	187	4.3	1138	0.165	20[6]	6.6	LOS A	4.0	29.0	500	–	0.0	0.0
Lane 2	0	202	318	520	2.9	632	0.823	100	33.5	LOS C	17.3	123.9	500	–	0.0	0.0
Approach	0	389	318	707	3.3		0.823		26.4	LOS B	17.3	123.9				
West: Addison Road																
Lane 1	226	0	0	226	2.8	1014	0.223	100	16.1	LOS B	5.3	38.1	500	–	0.0	0.0
Lane 2	0	0	226	226	0.0	424	0.533	100	34.6	LOS C	8.7	61.1	500	–	0.0	0.0
Approach	226	0	226	453	1.4		0.533		25.3	LOS B	8.7	61.1				
Intersection				1768	2.4		0.823		27.7	LOS B	17.3	123.9				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS C. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects

PHASING SUMMARY

Site: Addison_Enmore Thu 2010

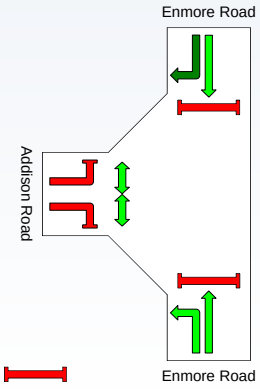
2010 Thursday PM
Addison Rd/Enmore Rd
Signals - Fixed Time Cycle Time = 70 seconds

Cycle Time Option: **Practical Cycle Time**
Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A1, A2, B
Output Sequence: A1, A2, B

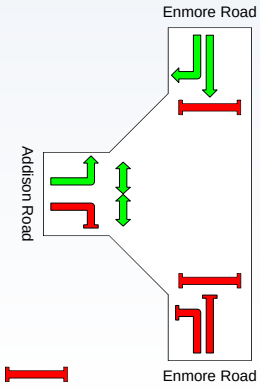
Phase Timing Results

Phase	A1	A2	B
Green Time (sec)	19	17	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	25	23	22
Phase Split	36 %	33 %	31 %

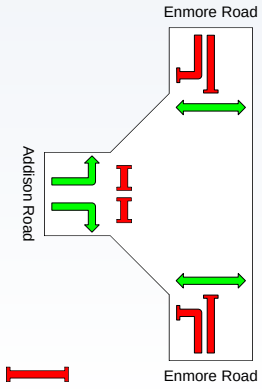
Phase A1



Phase A2



Phase B



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red
Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

LANE SUMMARY

Site: Addison_Enmore Sat 2010

2010 Saturday
Addison Rd/Enmore Rd
Signals - Fixed Time Cycle Time = 70 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Enmore Road																
Lane 1	117	15	0	132	0.3	586	0.226	33[6]	26.6	LOS B	4.7	32.9	500	–	0.0	0.0
Lane 2	0	417	0	417	2.4	603	0.692	100	23.7	LOS B	14.4	103.1	500	–	0.0	0.0
Approach	117	433	0	549	1.9		0.692		24.4	LOS B	14.4	103.1				
North: Enmore Road																
Lane 1	0	161	0	161	2.8	1149	0.140	20[6]	6.5	LOS A	3.4	24.6	500	–	0.0	0.0
Lane 2	0	183	255	438	2.4	626	0.700	100	25.1	LOS B	13.8	98.5	500	–	0.0	0.0
Approach	0	344	255	599	2.5		0.700		20.1	LOS B	13.8	98.5				
West: Addison Road																
Lane 1	277	0	0	277	1.1	947	0.292	100	18.1	LOS B	7.0	49.7	500	–	0.0	0.0
Lane 2	0	0	278	278	0.0	424	0.655	100	35.9	LOS C	10.7	75.0	500	–	0.0	0.0
Approach	277	0	278	555	0.6		0.655		27.0	LOS B	10.7	75.0				
Intersection				1703	1.7		0.700		23.7	LOS B	14.4	103.1				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS C. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

6 Lane underutilisation due to downstream effects

PHASING SUMMARY

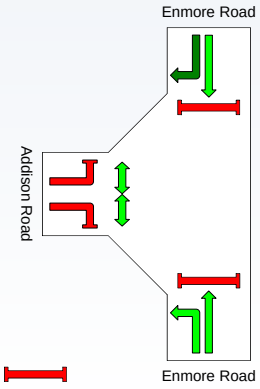
2010 Saturday
Addison Rd/Enmore Rd
Signals - Fixed Time Cycle Time = 70 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Delay)**
Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A1, A2, B
Output Sequence: A1, A2, B

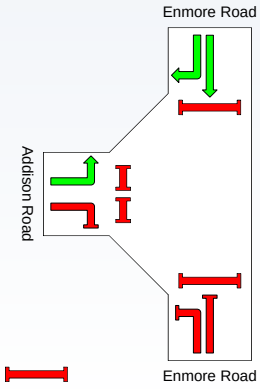
Phase Timing Results

Phase	A1	A2	B
Green Time (sec)	22	14	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	28	20	22
Phase Split	40 %	29 %	31 %

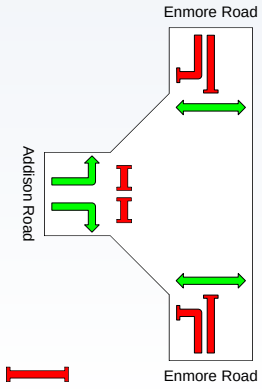
Phase A1



Phase A2



Phase B



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red
Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

LANE SUMMARY

Future Thursday PM
Addison Rd/Enmore Rd
Signals - Fixed Time Cycle Time = 80 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Enmore Road																
Lane 1	204	0	0	204	1.0	576	0.354	44[5]	31.4	LOS C	7.9	55.9	500	–	0.0	0.0
Lane 2	0	486	0	486	2.2	601	0.809	100	31.8	LOS C	20.3	145.0	500	–	0.0	0.0
Approach	204	486	0	691	1.8		0.809		31.7	LOS C	20.3	145.0				
North: Enmore Road																
Lane 1	0	204	0	204	2.5	1247	0.163	20[6]	5.8	LOS A	4.3	30.8	500	–	0.0	0.0
Lane 2	0	217	334	551	1.2	675	0.816	100	34.9	LOS C	19.5	137.8	500	–	0.0	0.0
Approach	0	421	334	755	1.5		0.816		27.0	LOS B	19.5	137.8				
West: Addison Road																
Lane 1	242	0	0	242	0.0	998	0.243	100	18.1	LOS B	6.6	46.0	500	–	0.0	0.0
Lane 2	0	0	258	258	3.7	362	0.713	100	43.0	LOS D	11.7	84.4	500	–	0.0	0.0
Approach	242	0	258	500	1.9		0.713		31.0	LOS C	11.7	84.4				
Intersection				1945	1.7		0.816		29.7	LOS C	20.3	145.0				

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS D. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects

SIDRA INTERSECTION

PHASING SUMMARY

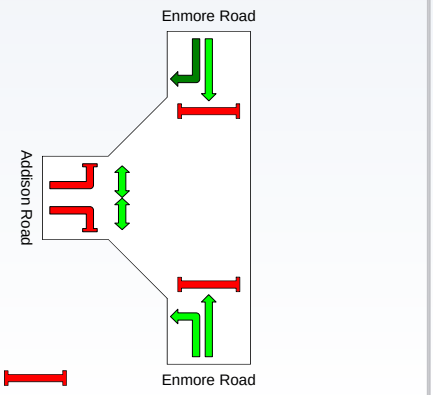
Future Thursday PM
Addison Rd/Enmore Rd
Signals - Fixed Time Cycle Time = 80 seconds

Cycle Time Option: **Practical Cycle Time**
Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A1, A2, B
Output Sequence: A1, A2, B

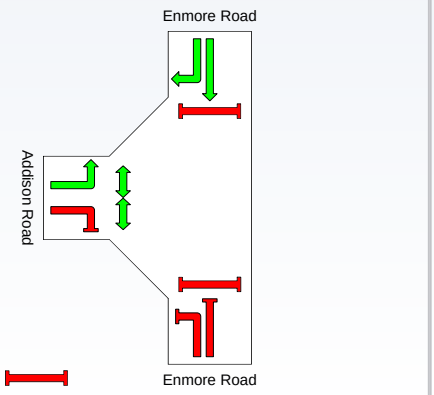
Phase Timing Results

Phase	A1	A2	B
Green Time (sec)	25	21	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	31	27	22
Phase Split	39 %	34 %	28 %

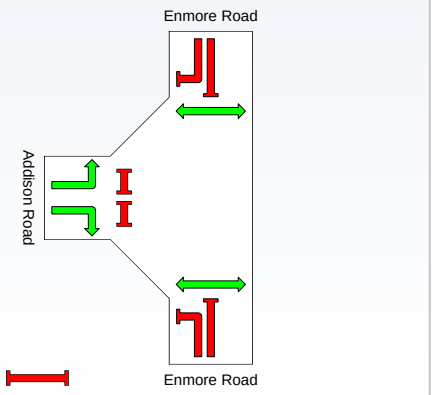
Phase A1



Phase A2



Phase B



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red
Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

SIDRA INTERSECTION

LANE SUMMARY

Future Saturday
Addison Rd/Enmore Rd
Signals - Fixed Time Cycle Time = 70 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Enmore Road																
Lane 1	171	0	0	171	0.6	608	0.281	34[5]	27.2	LOS B	5.9	41.3	500	–	0.0	0.0
Lane 2	0	522	0	522	1.4	635	0.822	100	28.7	LOS C	19.8	140.1	500	–	0.0	0.0
Approach	171	522	0	693	1.2		0.822		28.3	LOS B	19.8	140.1				
North: Enmore Road																
Lane 1	0	195	0	195	1.6	1158	0.168	20[6]	6.6	LOS A	4.1	29.4	500	–	0.0	0.0
Lane 2	0	194	271	464	0.7	553	0.840	100	36.2	LOS C	16.8	118.5	500	–	0.0	0.0
Approach	0	388	271	659	1.0		0.840		27.5	LOS B	16.8	118.5				
West: Addison Road																
Lane 1	293	0	0	293	0.4	926	0.316	100	18.8	LOS B	7.6	53.4	500	–	0.0	0.0
Lane 2	0	0	353	353	0.6	423	0.834	100	42.7	LOS D	14.8	104.2	500	–	0.0	0.0
Approach	293	0	353	645	0.5		0.834		31.8	LOS C	14.8	104.2				
Intersection				1997	0.9		0.840		29.2	LOS C	19.8	140.1				

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS D. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects

SIDRA INTERSECTION

PHASING SUMMARY

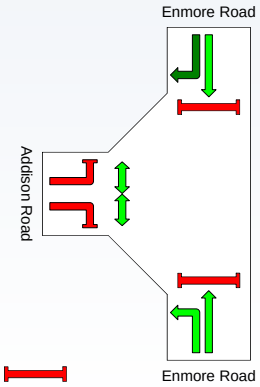
Future Saturday
Addison Rd/Enmore Rd
Signals - Fixed Time Cycle Time = 70 seconds

Cycle Time Option: **Practical Cycle Time**
Phase times determined by the program
Sequence: Three-Phase
Input Sequence: A1, A2, B
Output Sequence: A1, A2, B

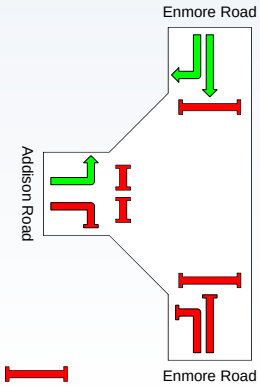
Phase Timing Results

Phase	A1	A2	B
Green Time (sec)	23	13	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	29	19	22
Phase Split	41 %	27 %	31 %

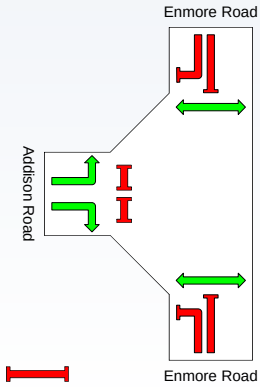
Phase A1



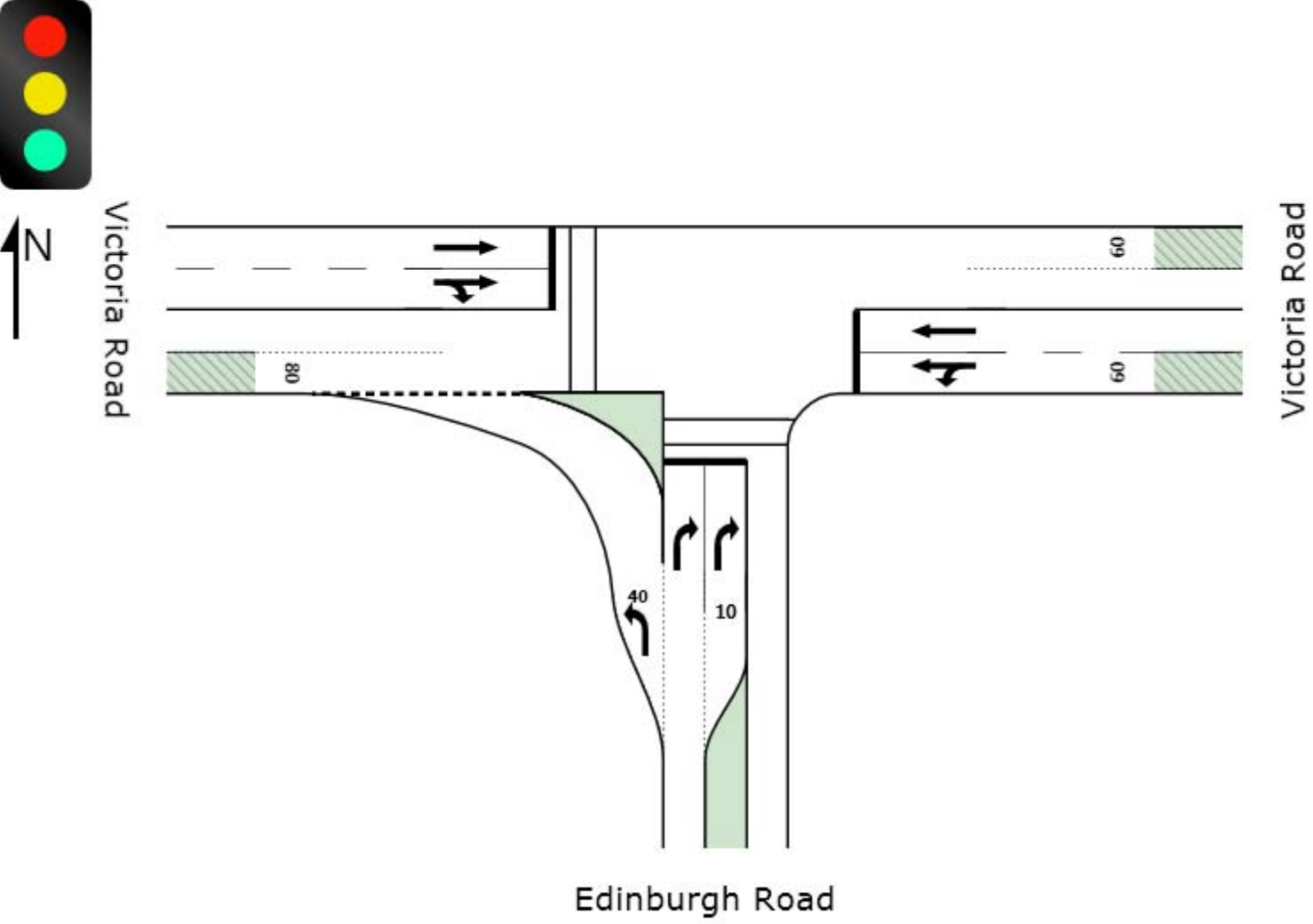
Phase A2



Phase B



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red
Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied


N
Victoria Road
Victoria Road
80
60
60
40
10
Edinburgh Road

LANE SUMMARY

2010 Thursday PM
Victoria Road / Edinburgh Road
Signals - Fixed Time Cycle Time = 90 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edinburgh Road																
Lane 1	502	0	0	502	0.0	502[1]	1.000[3]	100	14.2[8]	LOS A[8]	12.4[8]	87.0[8]	40	Turn Bay	0.0	64.2
Lane 2	150[0]	0	170	319	3.6	875	0.365	36[5]	23.4	LOS B	10.5	74.9	200	–	0.0	0.0
Lane 3	0	0	95	95	3.6	95[1]	1.000[3]	100	31.0[8]	LOS C[8]	3.3[8]	23.7[8]	10	Turn Bay	0.0	50.1
Approach	652	0	264	916	1.0		1.000		19.1	LOS B	12.4	87.0				
East: Victoria Road																
Lane 1	159	0	0	159	1.3	403[1]	0.394	64[5]	27.2	LOS B	6.2	43.9	60	Parking	0.0	0.0
Lane 2	0	460	0	460	2.3	747	0.616	100	23.9	LOS B	17.5	124.7	170	–	0.0	0.0
Approach	159	460	0	619	2.0		0.616		24.7	LOS B	17.5	124.7				
West: Victoria Road																
Lane 1	0	264	0	264	3.1	743	0.355	37[6]	21.0	LOS B	9.9	71.3	500	–	0.0	0.0
Lane 2	0	74	165	239	1.0	248	0.964	100	78.6	LOS F	16.8	118.3	500	–	0.0	0.0
Approach	0	338	165	503	2.1		0.964		48.4	LOS D	16.8	118.3				
Intersection				2038	1.6		1.000		28.1	LOS B	17.5	124.7				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS F. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

0 Excess flow from back of an adjacent short lane
1 Reduced capacity due to a short lane effect
3 x = 1.00 due to short lane.
5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

PHASING SUMMARY

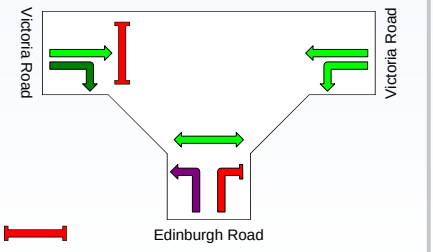
2010 Thursday PM
Victoria Road / Edinburgh Road
Signals - Fixed Time Cycle Time = 90 seconds

Cycle Time Option: **User-specified Cycle Time**
Phase times determined by the program
Sequence: Two-Phase
Input Sequence: A, C
Output Sequence: A, C

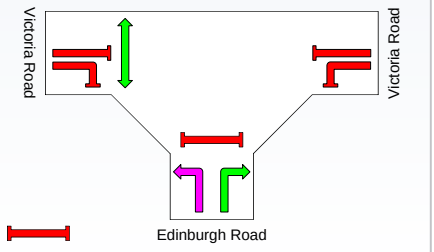
Phase Timing Results

Phase	A	C
Green Time (sec)	35	43
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	41	49
Phase Split	46 %	54 %

Phase A



Phase C



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red
Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

LANE SUMMARY

Site: Victoria_Edinburgh Sat 2010

2010 Saturday
Victoria Road / Edinburgh Road
Signals - Fixed Time Cycle Time = 90 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edinburgh Road																
Lane 1	466	0	0	466	0.2	466[1]	1.000[3]	100	11.9[8]	LOS A[8]	11.0[8]	77.5[8]	40	Turn Bay	0.0	50.7
Lane 2	6[0]	0	111	118	1.4	736	0.160	35[6]	25.9	LOS B	4.6	32.5	200	–	0.0	0.0
Lane 3	0	0	38	38	1.4	84[1]	0.451	100	25.0	LOS B	1.5	11.0	10	Turn Bay	0.0	6.9
Approach	473	0	149	622	0.5		1.000		15.3	LOS B	11.0	77.5				
East: Victoria Road																
Lane 1	194	0	0	194	0.5	452[1]	0.428	88[5]	22.7	LOS B	6.6	46.5	60	Parking	0.0	0.0
Lane 2	0	438	0	438	1.7	900	0.486	100	17.8	LOS B	14.7	104.0	170	–	0.0	0.0
Approach	194	438	0	632	1.3		0.486		19.3	LOS B	14.7	104.0				
West: Victoria Road																
Lane 1	0	318	0	318	1.6	901	0.353	37[6]	16.4	LOS B	10.6	74.9	500	–	0.0	0.0
Lane 2	0	79	242	321	0.4	335	0.958	100	76.3	LOS F	22.2	155.9	500	–	0.0	0.0
Approach	0	397	242	639	1.0		0.958		46.5	LOS D	22.2	155.9				
Intersection				1893	0.9		1.000		27.2	LOS B	22.2	155.9				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS F. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

0 Excess flow from back of an adjacent short lane
1 Reduced capacity due to a short lane effect
3 x = 1.00 due to short lane.
5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

PHASING SUMMARY

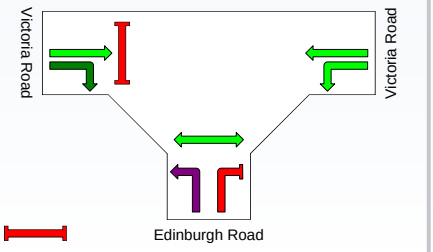
2010 Saturday
Victoria Road / Edinburgh Road
Signals - Fixed Time Cycle Time = 90 seconds

Cycle Time Option: **User-specified Cycle Time**
Phase times determined by the program
Sequence: Two-Phase
Input Sequence: A, B
Output Sequence: A, B

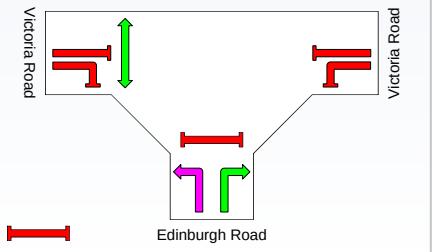
Phase Timing Results

Phase	A	B
Green Time (sec)	42	36
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	48	42
Phase Split	53 %	47 %

Phase A



Phase B



Normal Movement
Slip-Lane Movement
Stopped Movement
Turn On Red
Permitted/Opposed
Opposed Slip-Lane
Continuous Movement
Undetected Movement
Phase Transition Applied

LANE SUMMARY

Future Thursday PM
Victoria Road / Edinburgh Road
Signals - Fixed Time Cycle Time = 90 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edinburgh Road																
Lane 1	446	0	0	446	0.0	446[1]	1.000[3]	100	12.5[8]	LOS A[8]	11.1[8]	77.6[8]	40	Turn Bay	0.0	50.9
Lane 2	270[0]	0	262	532	2.7	818	0.651	65[5]	28.5	LOS C	19.3	136.8	200	–	0.0	0.0
Lane 3	0	0	90	90	2.7	90[1]	1.000[3]	100	32.4[8]	LOS C[8]	3.3[8]	23.7[8]	10	Turn Bay	0.0	50.1
Approach	717	0	352	1068	0.9		1.000		22.1	LOS B	19.3	136.8				
East: Victoria Road																
Lane 1	227	0	0	227	0.9	423[1]	0.538	94[5]	25.9	LOS B	8.3	58.2	60	Parking	0.0	4.2
Lane 2	0	466	0	466	2.3	811	0.575	100	21.4	LOS B	16.9	120.3	170	–	0.0	0.0
Approach	227	466	0	694	1.8		0.575		22.8	LOS B	16.9	120.3				
West: Victoria Road																
Lane 1	0	299	0	299	3.1	807	0.371	37[6]	19.1	LOS B	10.7	76.6	500	–	0.0	0.0
Lane 2	0	45	206	251	0.5	250	1.006	100	103.0	LOS F	20.2	142.1	500	–	0.0	0.0
Approach	0	344	206	551	1.9		1.006		57.4	LOS E	20.2	142.1				
Intersection				2313	1.4		1.006		30.7	LOS C	20.2	142.1				

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS F. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

0 Excess flow from back of an adjacent short lane
1 Reduced capacity due to a short lane effect
3 x = 1.00 due to short lane.
5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

SIDRA INTERSECTION

PHASING SUMMARY

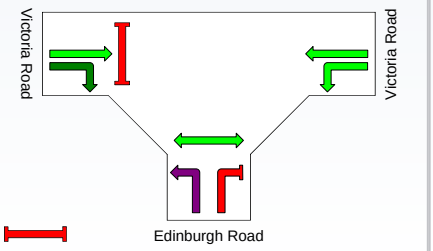
Future Thursday PM
Victoria Road / Edinburgh Road
Signals - Fixed Time Cycle Time = 90 seconds

Cycle Time Option: **User-specified Cycle Time**
Phase times determined by the program
Sequence: Two-Phase
Input Sequence: A, B
Output Sequence: A, B

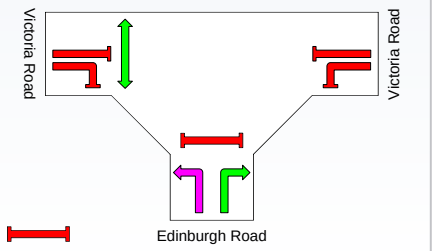
Phase Timing Results

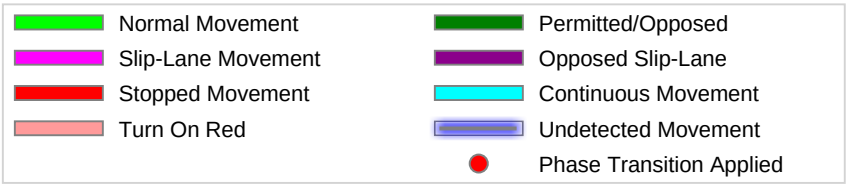
Phase	A	B
Green Time (sec)	38	40
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	44	46
Phase Split	49 %	51 %

Phase A



Phase B





LANE SUMMARY

Future Saturday
Victoria Road / Edinburgh Road
Signals - Fixed Time Cycle Time = 90 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edinburgh Road																
Lane 1	486	0	0	486	0.2	486[1]	1.000[3]	100	11.1[8]	LOS A[8]	11.0[8]	77.3[8]	40	Turn Bay	0.0	50.5
Lane 2	70[0]	0	234	304	0.7	575	0.528	53[5]	35.1	LOS C	12.7	89.3	200	–	0.0	0.0
Lane 3	0	0	74	74	0.7	74[1]	1.000[3]	100	38.3[8]	LOS C[8]	3.4[8]	23.6[8]	10	Turn Bay	0.0	50.1
Approach	556	0	307	863	0.4		1.000		21.9	LOS B	12.7	89.3				
East: Victoria Road																
Lane 1	327	0	0	327	0.3	519[1]	0.630	100	19.0	LOS B	9.4	66.0	60	Parking	0.0	8.1
Lane 2	0	435	0	435	1.7	1072	0.406	64[5]	12.2	LOS A	12.5	88.4	170	–	0.0	0.0
Approach	327	435	0	762	1.1		0.630		15.1	LOS B	12.5	88.4				
West: Victoria Road																
Lane 1	0	389	0	389	1.6	1072	0.363	37[6]	11.9	LOS A	11.1	78.6	500	–	0.0	0.0
Lane 2	0	5	325	330	0.0	335	0.985	100	93.8	LOS F	26.2	183.3	500	–	0.0	0.0
Approach	0	394	325	719	0.9		0.985		49.5	LOS D	26.2	183.3				
Intersection				2344	0.8		1.000		28.2	LOS B	26.2	183.3				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS F. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

0 Excess flow from back of an adjacent short lane
1 Reduced capacity due to a short lane effect
3 x = 1.00 due to short lane.
5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

SIDRA INTERSECTION

PHASING SUMMARY

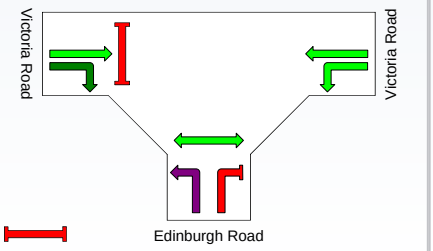
Future Saturday
Victoria Road / Edinburgh Road
Signals - Fixed Time Cycle Time = 90 seconds

Cycle Time Option: **User-specified Cycle Time**
Phase times determined by the program
Sequence: Two-Phase
Input Sequence: A, B
Output Sequence: A, B

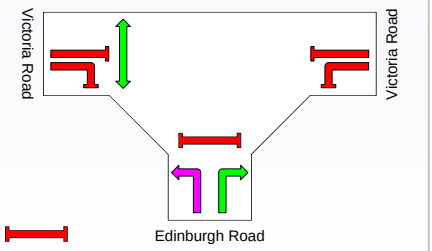
Phase Timing Results

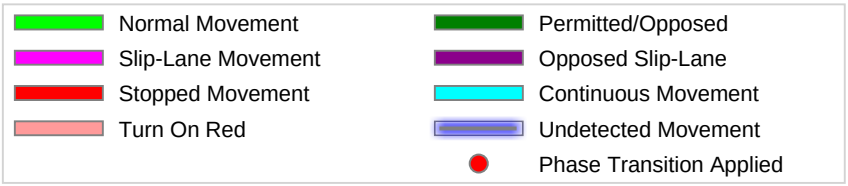
Phase	A	B
Green Time (sec)	50	28
Yellow Time (sec)	4	4
All-Red Time (sec)	2	2
Phase Time (sec)	56	34
Phase Split	62 %	38 %

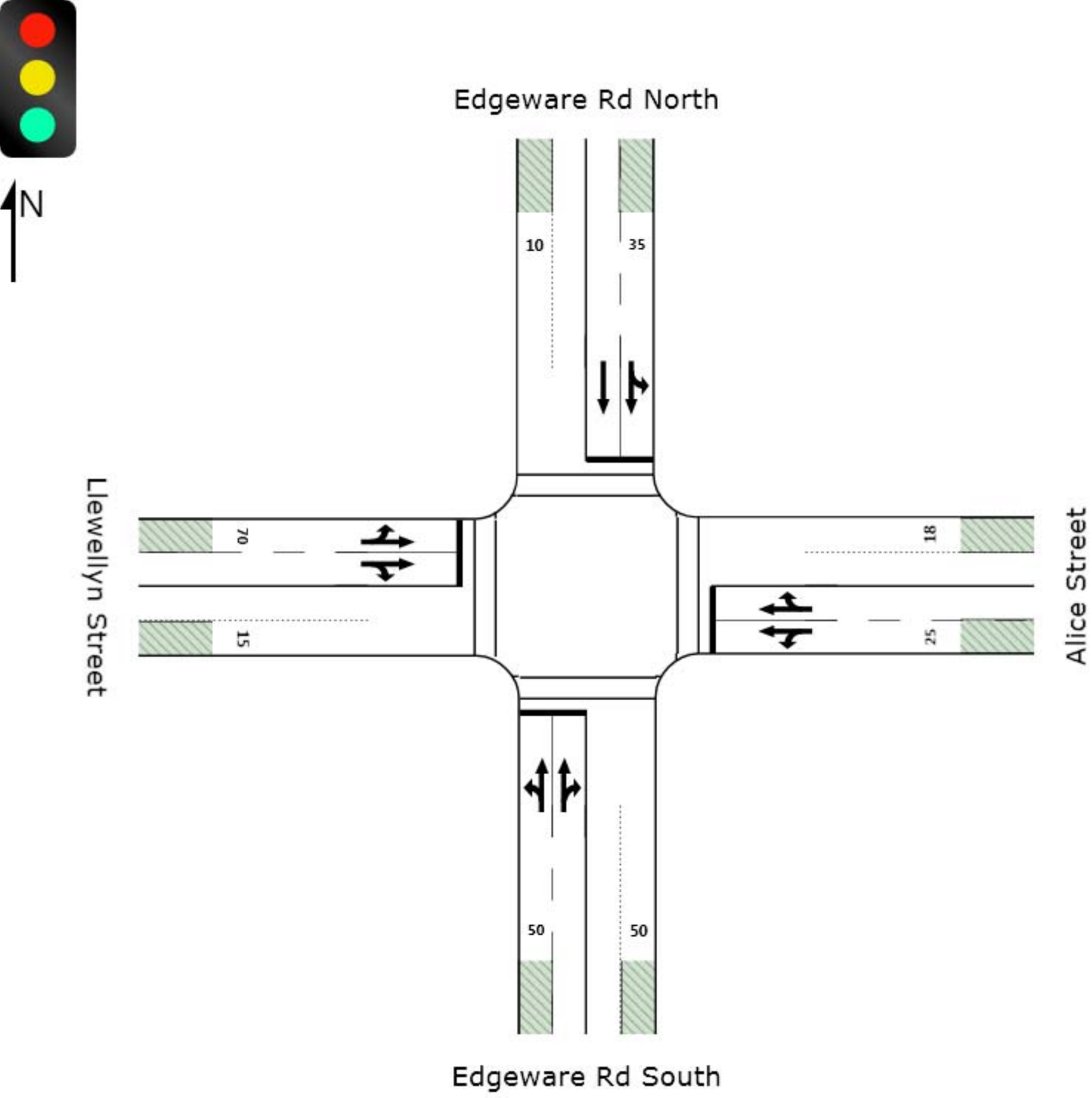
Phase A



Phase B






Edgeware Rd North
N
10
35
Llewellyn Street
70
15
18
25
Alice Street
50
50
Edgeware Rd South

LANE SUMMARY

Site: THU PM 2010, Ex. Layout Operation

EDGEWARE RD, ALICE ST & LLEWELLYN * 052929~1
THURSDAY PM PEAK, 2010 TRAFFIC FLOWS
EXISTING INTERSECTION LAYOUT
Signals - Fixed Time Cycle Time = 70 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edgeware Rd South																
Lane 1	197	260	0	457	0.1	576[1]	0.794	80[7]	20.2	LOS B	13.0	84.5	50	Parking	0.0	41.4
Lane 2	0	469	135	604	1.0	609	0.992	100	70.3	LOS E	32.9	215.7	500	–	0.0	0.0
Approach	197	729	135	1061	0.6		0.992		48.7	LOS D	32.9	215.7				
East: Alice Street																
Lane 1	89	83	0	172	2.4	211[1]	0.815	80[7]	35.3	LOS C	7.6	50.5	25	Parking	0.0	47.1
Lane 2	0	93	191	284	0.0	278	1.019	100	91.4	LOS F	18.9	122.9	500	–	0.0	0.0
Approach	89	176	191	456	0.9		1.019		70.2	LOS E	18.9	122.9				
North: Edgeware Rd North																
Lane 1	176	71	0	246	0.1	304[1]	0.809	80[7]	33.7	LOS C	9.9	64.5	35	Parking	0.0	43.9
Lane 2	0	561	0	561	0.3	554	1.012	100	80.0	LOS F	35.9	233.9	500	–	0.0	0.0
Approach	176	632	0	807	0.3		1.012		65.8	LOS E	35.9	233.9				
West: Llewellyn Street																
Lane 1	29	102	0	132	0.0	406	0.324	80[7]	25.8	LOS B	5.2	33.9	70	Parking	0.0	0.0
Lane 2	0	32	68	100	0.0	247	0.405	100	34.4	LOS C	4.5	29.2	500	–	0.0	0.0
Approach	29	134	68	232	0.0		0.405		29.5	LOS C	5.2	33.9				
Intersection				2556	0.5		1.019		56.2	LOS D	35.9	233.9				

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS F. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect
7 Lane underutilisation specified by user

PHASING SUMMARY

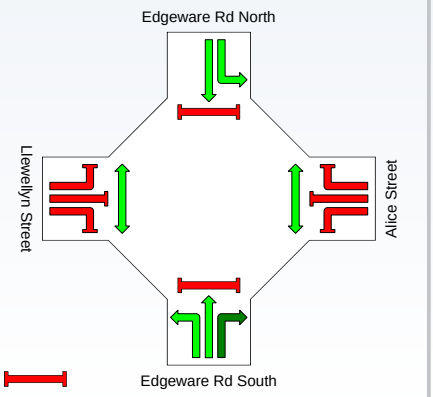
EDGEWARE RD, ALICE ST & LLEWELLYN * 052929~1
THURSDAY PM PEAK, 2010 TRAFFIC FLOWS
EXISTING INTERSECTION LAYOUT
Signals - Fixed Time Cycle Time = 70 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Degree of Saturation)**
Phase times determined by the program
Sequence: Sequence 1
Input Sequence: A, B, C
Output Sequence: A, B, C

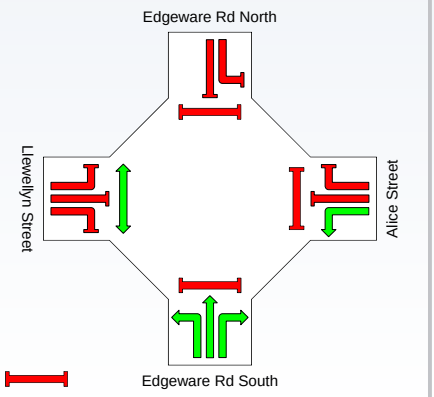
Phase Timing Results

Phase	A	B	C
Green Time (sec)	23	12	17
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	29	18	23
Phase Split	41 %	26 %	33 %

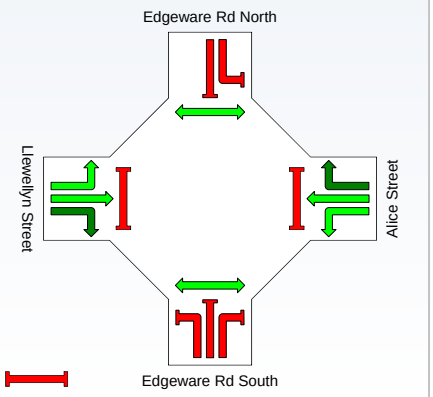
Phase A

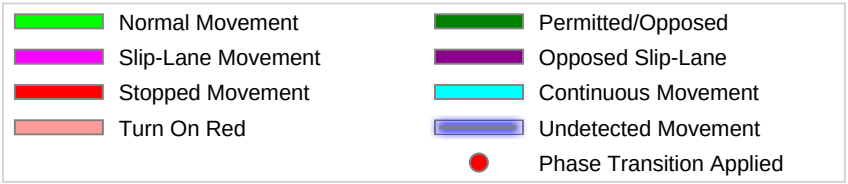


Phase B



Phase C





LANE SUMMARY

Site: THU PM 2010, Ex. Layout Operation

EDGEWARE RD, ALICE ST & LLEWELLYN * 052929~1
THURSDAY PM PEAK, 2010 TRAFFIC FLOWS
EXISTING INTERSECTION LAYOUT
Signals - Fixed Time Cycle Time = 70 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edgeware Rd South																
Lane 1	197	260	0	457	0.1	576[1]	0.794	80[7]	20.2	LOS B	13.0	84.5	50	Parking	0.0	41.4
Lane 2	0	469	135	604	1.0	609	0.992	100	70.3	LOS E	32.9	215.7	500	–	0.0	0.0
Approach	197	729	135	1061	0.6		0.992		48.7	LOS D	32.9	215.7				
East: Alice Street																
Lane 1	89	83	0	172	2.4	211[1]	0.815	80[7]	35.3	LOS C	7.6	50.5	25	Parking	0.0	47.1
Lane 2	0	93	191	284	0.0	278	1.019	100	91.4	LOS F	18.9	122.9	500	–	0.0	0.0
Approach	89	176	191	456	0.9		1.019		70.2	LOS E	18.9	122.9				
North: Edgeware Rd North																
Lane 1	176	71	0	246	0.1	304[1]	0.809	80[7]	33.7	LOS C	9.9	64.5	35	Parking	0.0	43.9
Lane 2	0	561	0	561	0.3	554	1.012	100	80.0	LOS F	35.9	233.9	500	–	0.0	0.0
Approach	176	632	0	807	0.3		1.012		65.8	LOS E	35.9	233.9				
West: Llewellyn Street																
Lane 1	29	102	0	132	0.0	406	0.324	80[7]	25.8	LOS B	5.2	33.9	70	Parking	0.0	0.0
Lane 2	0	32	68	100	0.0	247	0.405	100	34.4	LOS C	4.5	29.2	500	–	0.0	0.0
Approach	29	134	68	232	0.0		0.405		29.5	LOS C	5.2	33.9				
Intersection				2556	0.5		1.019		56.2	LOS D	35.9	233.9				

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS F. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect
7 Lane underutilisation specified by user

PHASING SUMMARY

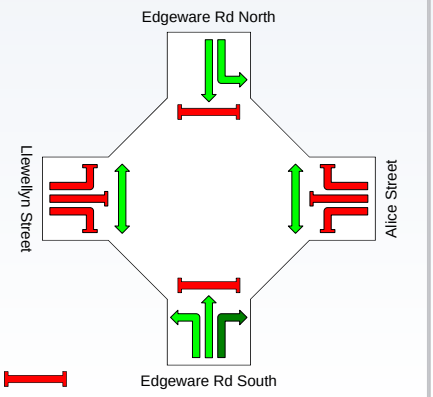
EDGEWARE RD, ALICE ST & LLEWELLYN * 052929~1
THURSDAY PM PEAK, 2010 TRAFFIC FLOWS
EXISTING INTERSECTION LAYOUT
Signals - Fixed Time Cycle Time = 70 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Degree of Saturation)**
Phase times determined by the program
Sequence: Sequence 1
Input Sequence: A, B, C
Output Sequence: A, B, C

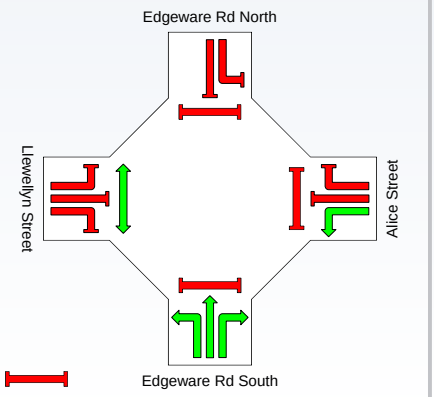
Phase Timing Results

Phase	A	B	C
Green Time (sec)	23	12	17
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	29	18	23
Phase Split	41 %	26 %	33 %

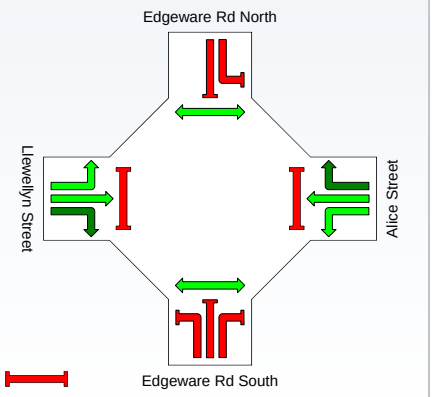
Phase A

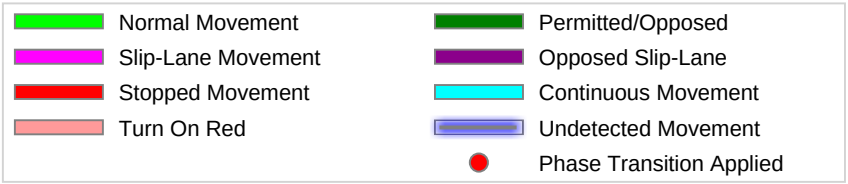


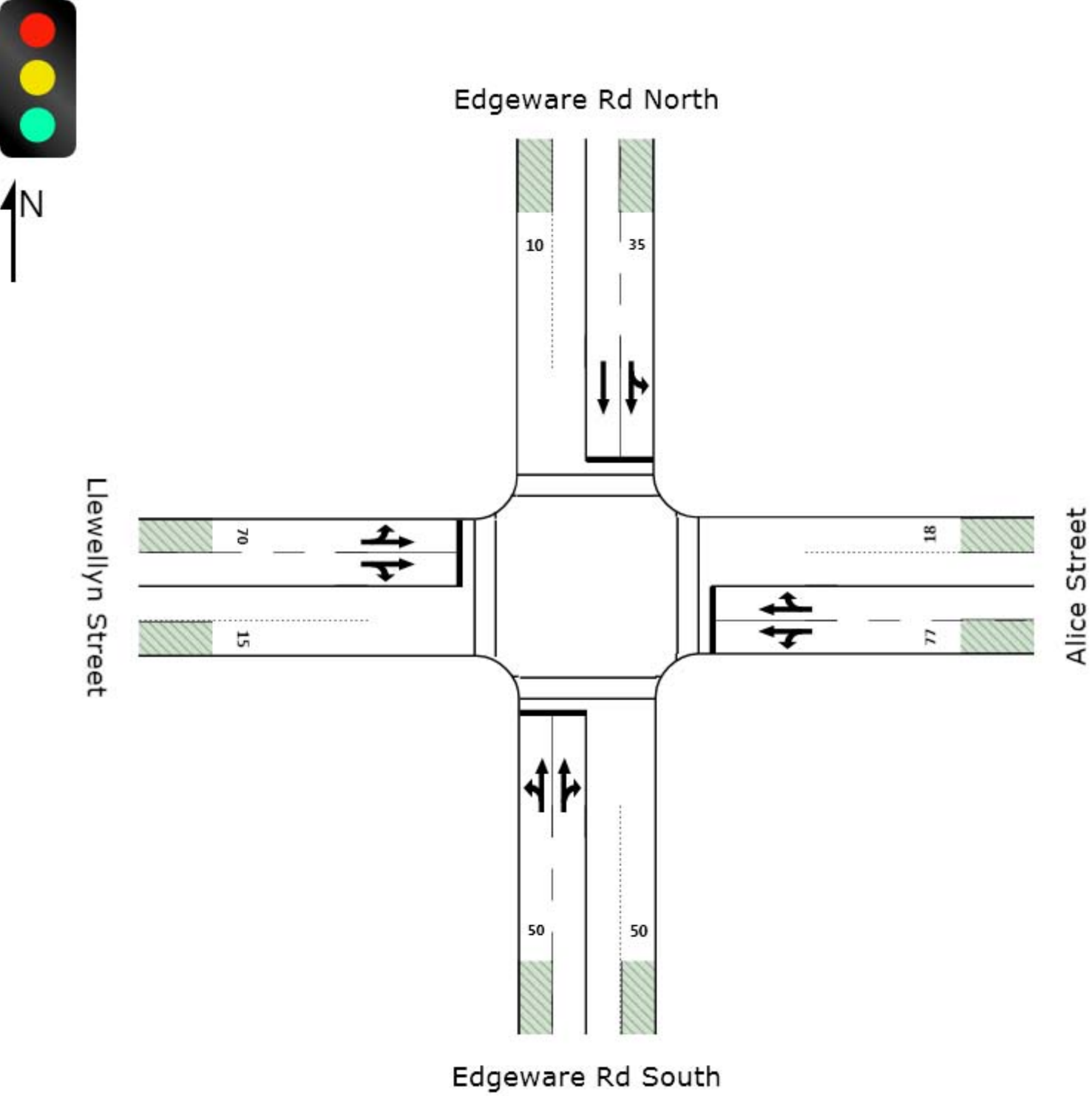
Phase B



Phase C






Edgeware Rd North
N
10
35
Llewellyn Street
70
15
18
77
Alice Street
50
50
Edgeware Rd South

LANE SUMMARY

Site: THU PM FUTURE, Imp. Scheme

EDGEWARE RD, ALICE ST & LLEWELLYN
THURSDAY PM PEAK, 2010 TRAFFIC FLOWS
EXTENDED NO PARKING ON ALICE STREET
Signals - Fixed Time Cycle Time = 70 seconds

* 052929~1

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edgeware Rd South																
Lane 1	197	268	0	465	0.1	590[1]	0.788	80[7]	19.2	LOS B	12.8	83.2	50	Parking	0.0	39.8
Lane 2	0	455	138	593	1.0	602	0.986	100	67.3	LOS E	31.5	207.0	500	–	0.0	0.0
Approach	197	723	138	1058	0.6		0.986		46.2	LOS D	31.5	207.0				
East: Alice Street																
Lane 1	93	201	0	294	1.4	400	0.734	80[7]	31.1	LOS C	11.7	77.4	77	Parking	0.0	5.2
Lane 2	0	2	191	193	0.0	210	0.917	100	56.1	LOS D	10.4	67.7	500	–	0.0	0.0
Approach	93	203	191	486	0.9		0.917		41.0	LOS C	11.7	77.4				
North: Edgeware Rd North																
Lane 1	176	68	0	243	0.1	310[1]	0.785	80[7]	31.3	LOS C	9.4	61.4	35	Parking	0.0	38.3
Lane 2	0	568	0	568	0.3	579	0.982	100	63.8	LOS E	32.6	212.3	500	–	0.0	0.0
Approach	176	636	0	812	0.3		0.982		54.1	LOS D	32.6	212.3				
West: Llewellyn Street																
Lane 1	36	146	0	182	0.0	383	0.474	80[7]	27.5	LOS B	7.2	46.8	70	Parking	0.0	0.0
Lane 2	0	15	80	95	0.0	161	0.593	100	41.7	LOS C	4.7	30.8	500	–	0.0	0.0
Approach	36	161	80	277	0.0		0.593		32.4	LOS C	7.2	46.8				
Intersection				2633	0.5		0.986		46.2	LOS D	32.6	212.3				

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS E. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect
7 Lane underutilisation specified by user

SIDRA INTERSECTION

PHASING SUMMARY

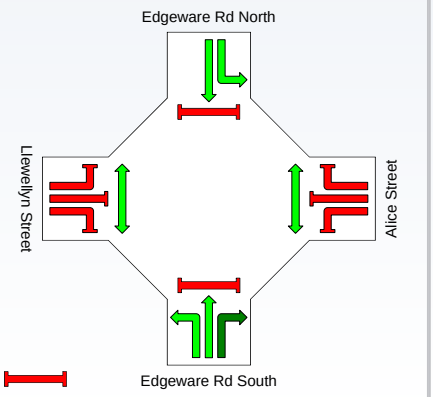
EDGEWARE RD, ALICE ST & LLEWELLYN * 052929~1
THURSDAY PM PEAK, 2010 TRAFFIC FLOWS
EXTENDED NO PARKING ON ALICE STREET
Signals - Fixed Time Cycle Time = 70 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Degree of Saturation)**
Phase times determined by the program
Sequence: Sequence 1
Input Sequence: A, B, C
Output Sequence: A, B, C

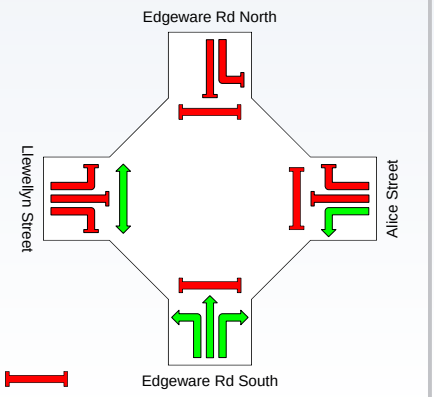
Phase Timing Results

Phase	A	B	C
Green Time (sec)	24	12	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	30	18	22
Phase Split	43 %	26 %	31 %

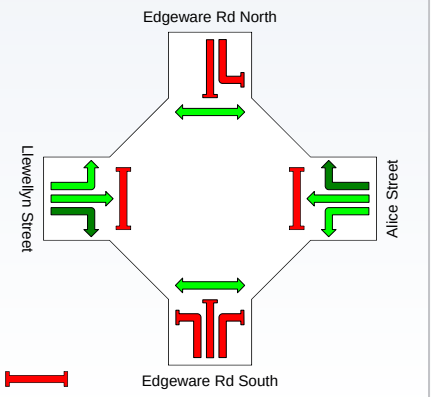
Phase A

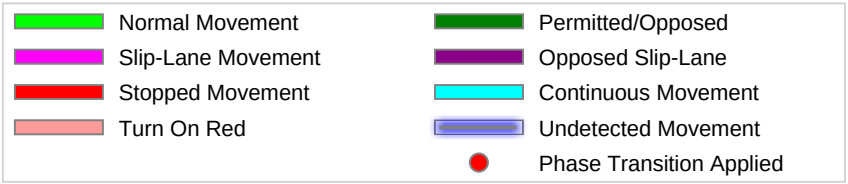


Phase B



Phase C





LANE SUMMARY

Site: SAT FUTURE, Ex. Layout Operation

EDGEWARE RD, ALICE ST & LLEWELLYN * 052929~1
SATURDAY MIDDAY PEAK, 2010 TRAFFIC FLOWS
EXISTING INTERSECTION LAYOUT
Signals - Fixed Time Cycle Time = 70 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edgeware Rd South																
Lane 1	167	312	0	479	0.6	588[1]	0.815	80[7]	21.6[8]	LOS B[8]	14.0[8]	91.3[8]	50	Parking	0.0	50.0
Lane 2	0	378	160	538	0.6	528	1.019	100	75.0	LOS F	32.6	213.3	500	–	0.0	0.0
Approach	167	689	160	1017	0.6		1.019		49.8	LOS D	32.6	213.3				
East: Alice Street																
Lane 1	119	55	0	174	0.6	219[1]	0.796	80[7]	34.1	LOS C	7.4	48.5	25	Parking	0.0	43.0
Lane 2	0	79	158	237	0.4	238	0.995	100	79.0	LOS F	15.0	98.2	500	–	0.0	0.0
Approach	119	135	158	412	0.5		0.995		60.0	LOS E	15.0	98.2				
North: Edgeware Rd North																
Lane 1	193	65	0	257	0.1	316[1]	0.815	80[7]	33.2	LOS C	10.2	66.2	35	Parking	0.0	46.8
Lane 2	0	613	0	613	0.5	602	1.018	100	83.5	LOS F	40.4	263.5	500	–	0.0	0.0
Approach	193	678	0	871	0.4		1.018		68.6	LOS E	40.4	263.5				
West: Llewellyn Street																
Lane 1	36	144	0	180	0.0	383	0.469	80[7]	27.5	LOS B	7.1	46.3	70	Parking	0.0	0.0
Lane 2	0	60	103	163	0.0	279	0.587	100	33.6	LOS C	7.0	45.5	500	–	0.0	0.0
Approach	36	204	103	343	0.0		0.587		30.4	LOS C	7.1	46.3				
Intersection				2642	0.4		1.019		55.1	LOS D	40.4	263.5				

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS F. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect
7 Lane underutilisation specified by user
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

PHASING SUMMARY

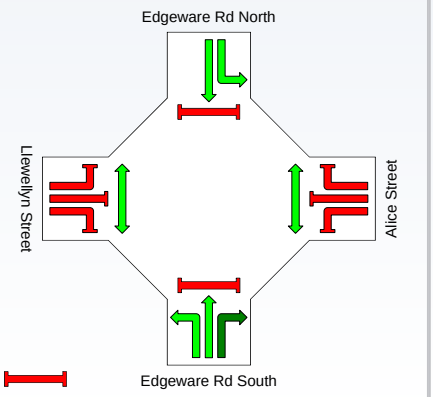
EDGEWARE RD, ALICE ST & LLEWELLYN * 052929~1
SATURDAY MIDDAY PEAK, 2010 TRAFFIC FLOWS
EXISTING INTERSECTION LAYOUT
Signals - Fixed Time Cycle Time = 70 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Degree of Saturation)**
Phase times determined by the program
Sequence: Sequence 1
Input Sequence: A, B, C
Output Sequence: A, B, C

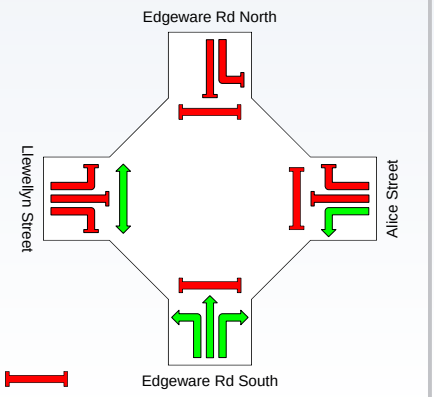
Phase Timing Results

Phase	A	B	C
Green Time (sec)	25	11	16
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	31	17	22
Phase Split	44 %	24 %	31 %

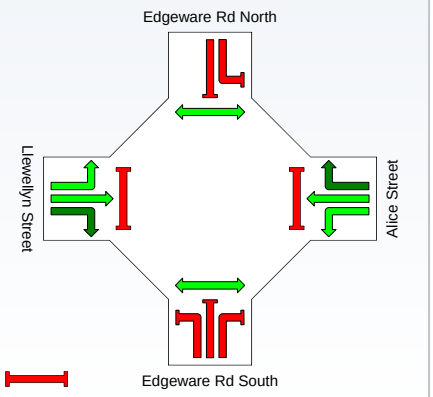
Phase A

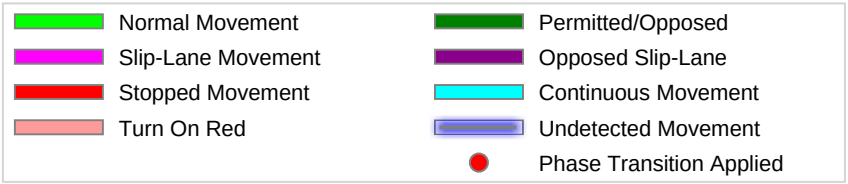


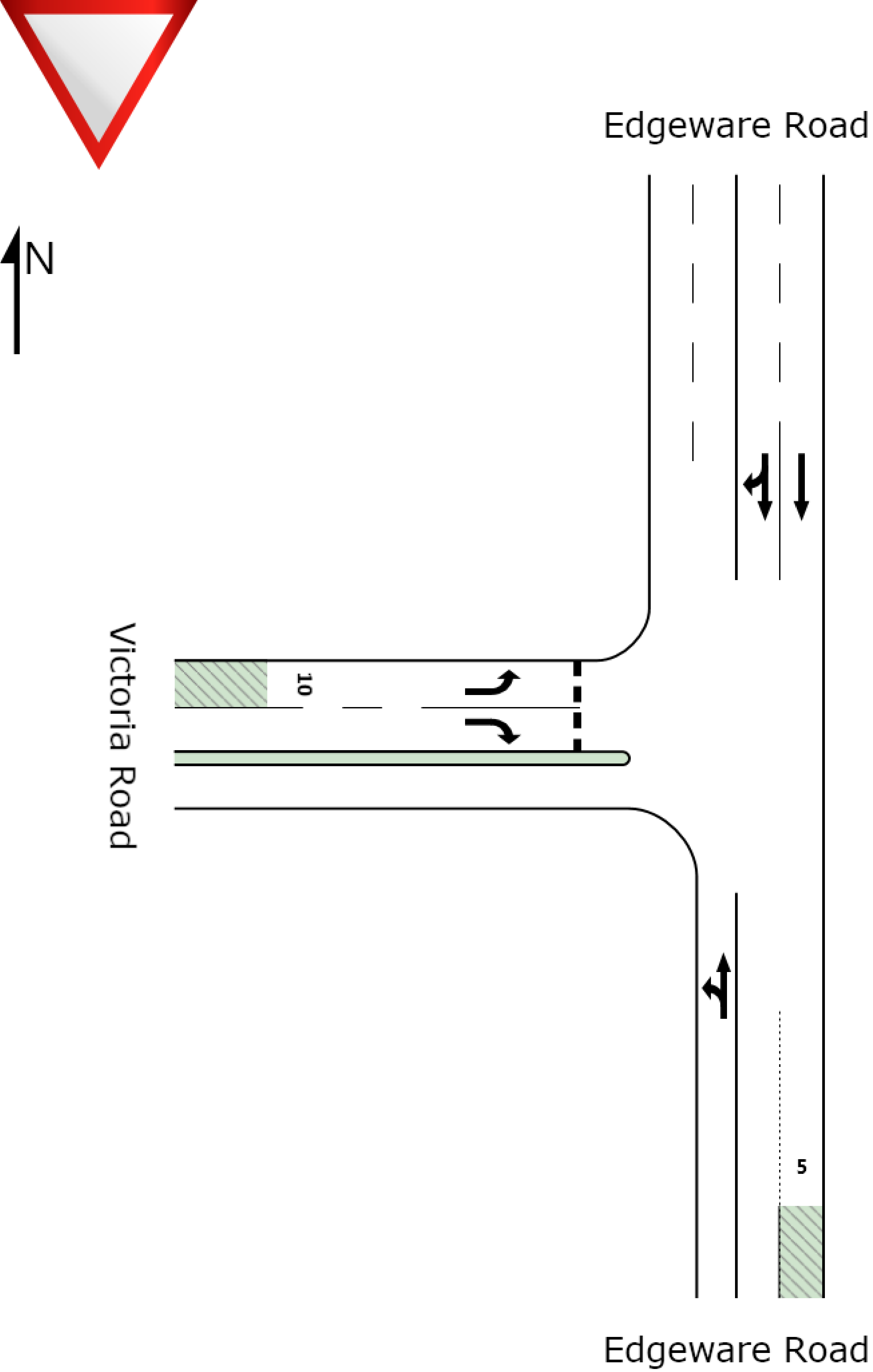
Phase B



Phase C







Edgeware Road
N
Victoria Road
10
5
Edgeware Road

LANE SUMMARY

Site: Edgeware_Victoria Thu

2010 Thursday PM
Edgeware Road / Victoria Road
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edgeware Road																
Lane 1	13	787	0	800	0.8	1894	0.422	100	6.4	LOS A	9.3	65.7	500	–	0.0	0.0
Approach	13	787	0	800	0.8		0.422		6.4	LOS A	9.3	65.7				
North: Edgeware Road																
Lane 1	0	244	0	244	0.9	1939	0.126	20[6]	0.0	LOS A	0.0	0.0	500	–	0.0	0.0
Lane 2	0	352	225	577	0.5	918	0.629	100	18.4	LOS B	8.9	62.5	500	–	0.0	0.0
Approach	0	596	225	821	0.6		0.629		12.9	LOS B	8.9	62.5				
West: Victoria Road																
Lane 1	254	0	0	254	0.0	399[1]	0.635	100	18.6	LOS B	3.5	24.8	10	Parking	0.0	34.5
Lane 2	0	0	12	12	0.0	99	0.117	100	41.3	LOS C	0.4	2.9	80	–	0.0	0.0
Approach	254	0	12	265	0.0		0.635		19.6	LOS C	3.5	24.8				
Intersection				1886	0.6		0.635		11.1	NA	9.3	65.7				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Lane): LOS C. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.

1 Reduced capacity due to a short lane effect
6 Lane underutilisation due to downstream effects

LANE SUMMARY

Site: Edgeware_Victoria Sat

2010 Saturday
Edgeware Road / Victoria Road
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edgeware Road																
Lane 1	23	655	0	678	0.8	1844	0.368	100	5.9	LOS A	7.0	49.5	500	–	0.0	0.0
Approach	23	655	0	678	0.8		0.368		5.9	LOS A	7.0	49.5				
North: Edgeware Road																
Lane 1	0	237	0	237	1.0	1937	0.122	20[6]	0.0	LOS A	0.0	0.0	500	–	0.0	0.0
Lane 2	0	368	264	633	0.6	1034	0.612	100	14.5	LOS B	9.3	65.5	500	–	0.0	0.0
Approach	0	605	264	869	0.7		0.612		10.6	LOS B	9.3	65.5				
West: Victoria Road																
Lane 1	357	0	0	357	0.0	461[1]	0.774	100	15.9[8]	LOS B[8]	4.3[8]	30.4[8]	10	Parking	0.0	50.6
Lane 2	0	0	34	34	0.0	114	0.294	100	41.8	LOS C	1.1	7.9	80	–	0.0	0.0
Approach	357	0	34	391	0.0		0.774		18.2	LOS C	4.3	30.4				
Intersection				1938	0.6		0.774		10.5	NA	9.3	65.5				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Lane): LOS C. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.

1 Reduced capacity due to a short lane effect
6 Lane underutilisation due to downstream effects
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

LANE SUMMARY

Site: Future Edgeware_Victoria
Thu with Existing layout

Future Thursday PM
Edgeware Road / Victoria Road
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edgeware Road																
Lane 1	13	788	0	801	0.8	1895	0.423	100	6.3	LOS A	9.3	65.4	500	–	0.0	0.0
Approach	13	788	0	801	0.8		0.423		6.3	LOS A	9.3	65.4				
North: Edgeware Road																
Lane 1	0	259	0	259	0.9	1939	0.133	20[6]	0.0	LOS A	0.0	0.0	500	–	0.0	0.0
Lane 2	0	331	249	580	0.5	870	0.667	100	19.4	LOS B	9.2	64.5	500	–	0.0	0.0
Approach	0	589	249	839	0.6		0.667		13.4	LOS B	9.2	64.5				
West: Victoria Road																
Lane 1	261	0	0	261	0.0	399[1]	0.654	100	19.1	LOS B	3.8	26.3	10	Parking	0.0	38.0
Lane 2	0	0	12	12	0.0	95	0.122	100	42.6	LOS D	0.4	3.0	80	–	0.0	0.0
Approach	261	0	12	273	0.0		0.654		20.1	LOS D	3.8	26.3				
Intersection				1913	0.6		0.667		11.4	NA	9.3	65.4				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Lane): LOS D. LOS Method for individual lanes: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any lane.

1 Reduced capacity due to a short lane effect
6 Lane underutilisation due to downstream effects

LANE SUMMARY

Site: Future Edgeware_Victoria
Sat with Existing layout

Future Saturday
Edgeware Road / Victoria Road
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Edgeware Road																
Lane 1	23	646	0	669	0.9	1843	0.363	100	5.5	LOS A	6.7	47.1	500	–	0.0	0.0
Approach	23	646	0	669	0.9		0.363		5.5	LOS A	6.7	47.1				
North: Edgeware Road																
Lane 1	0	261	0	261	0.9	1939	0.135	20[6]	0.0	LOS A	0.0	0.0	500	–	0.0	0.0
Lane 2	0	324	322	646	0.5	959	0.674	100	15.8	LOS B	10.0	70.2	500	–	0.0	0.0
Approach	0	585	322	907	0.6		0.674		11.3	LOS B	10.0	70.2				
West: Victoria Road																
Lane 1	379	0	0	379	0.0	466[1]	0.814	100	15.3[8]	LOS B[8]	4.3[8]	30.4[8]	10	Parking	0.0	50.6
Lane 2	0	0	34	34	0.0	108	0.311	100	44.3	LOS D	1.2	8.3	80	–	0.0	0.0
Approach	379	0	34	413	0.0		0.814		17.7	LOS D	4.3	30.4				
Intersection				1989	0.6		0.814		10.7	NA	10.0	70.2				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Lane): LOS D. LOS Method for individual lanes: Delay (RTA NSW).

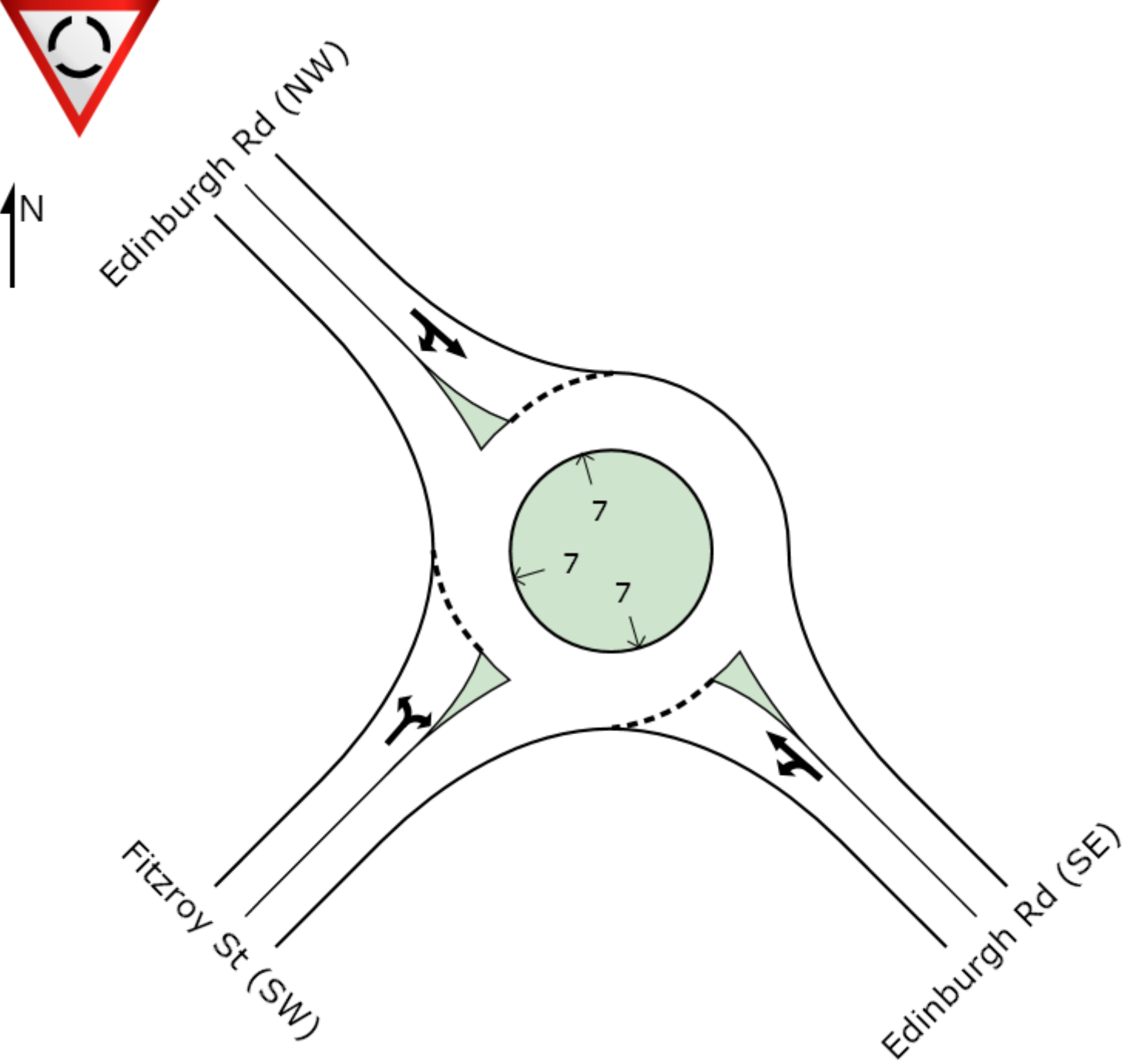
Approach LOS values are based on the worst delay for any lane.

1 Reduced capacity due to a short lane effect

6 Lane underutilisation due to downstream effects

8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

SIDRA INTERSECTION


N
Edinburgh Rd (NW)
7
7
7
Fitzroy St (SW)
Edinburgh Rd (SE)

LANE SUMMARY

Site: Edinburgh_Fitzroy Thu 2010

2010 Thursday PM
Edinburgh / Fitzroy
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Edinburgh Rd (SE)																
Lane 1	327	352	0	679	0.3	1517	0.448	100	6.0	LOS A	4.6	32.2	500	–	0.0	0.0
Approach	327	352	0	679	0.3		0.448		6.0	LOS A	4.6	32.2				
North West: Edinburgh Rd (NW)																
Lane 1	0	443	21	464	1.4	1055	0.440	100	7.2	LOS A	3.9	27.7	500	–	0.0	0.0
Approach	0	443	21	464	1.4		0.440		7.2	LOS A	3.9	27.7				
South West: Fitzroy St (SW)																
Lane 1	38	0	207	245	0.0	912	0.269	100	10.9	LOS A	1.9	13.2	500	–	0.0	0.0
Approach	38	0	207	245	0.0		0.269		10.9	LOS A	1.9	13.2				
Intersection				1388	0.6		0.448		7.3	LOS A	4.6	32.2				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

LANE SUMMARY

Site: Edinburgh_Fitzroy Sat 2010

2010 Saturday
Edinburgh / Fitzroy
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Edinburgh Rd (SE)																
Lane 1	195	842	0	1037	0.4	1514	0.685	100	5.9	LOS A	10.2	71.3	500	–	0.0	0.0
Approach	195	842	0	1037	0.4		0.685		5.9	LOS A	10.2	71.3				
North West: Edinburgh Rd (NW)																
Lane 1	0	291	31	321	0.7	1114	0.288	100	6.7	LOS A	2.4	16.9	500	–	0.0	0.0
Approach	0	291	31	321	0.7		0.288		6.7	LOS A	2.4	16.9				
South West: Fitzroy St (SW)																
Lane 1	96	0	143	239	1.3	573	0.417	100	16.5	LOS B	3.6	25.4	500	–	0.0	0.0
Approach	96	0	143	239	1.3		0.417		16.5	LOS B	3.6	25.4				
Intersection				1597	0.6		0.685		7.6	LOS A	10.2	71.3				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS B. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

LANE SUMMARY

Future Thursday PM
Edinburgh / Fitzroy
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Edinburgh Rd (SE)																
Lane 1	218	892	0	1109	0.4	1437	0.772	100	6.3	LOS A	14.0	98.4	500	–	0.0	0.0
Approach	218	892	0	1109	0.4		0.772		6.3	LOS A	14.0	98.4				
North West: Edinburgh Rd (NW)																
Lane 1	0	378	53	431	0.5	1040	0.414	100	7.3	LOS A	3.9	27.2	500	–	0.0	0.0
Approach	0	378	53	431	0.5		0.414		7.3	LOS A	3.9	27.2				
South West: Fitzroy St (SW)																
Lane 1	152	0	200	352	0.9	501	0.701	100	26.7	LOS B	9.1	64.3	500	–	0.0	0.0
Approach	152	0	200	352	0.9		0.701		26.7	LOS B	9.1	64.3				
Intersection				1892	0.5		0.772		10.3	LOS A	14.0	98.4				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS B. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

SIDRA INTERSECTION

LANE SUMMARY

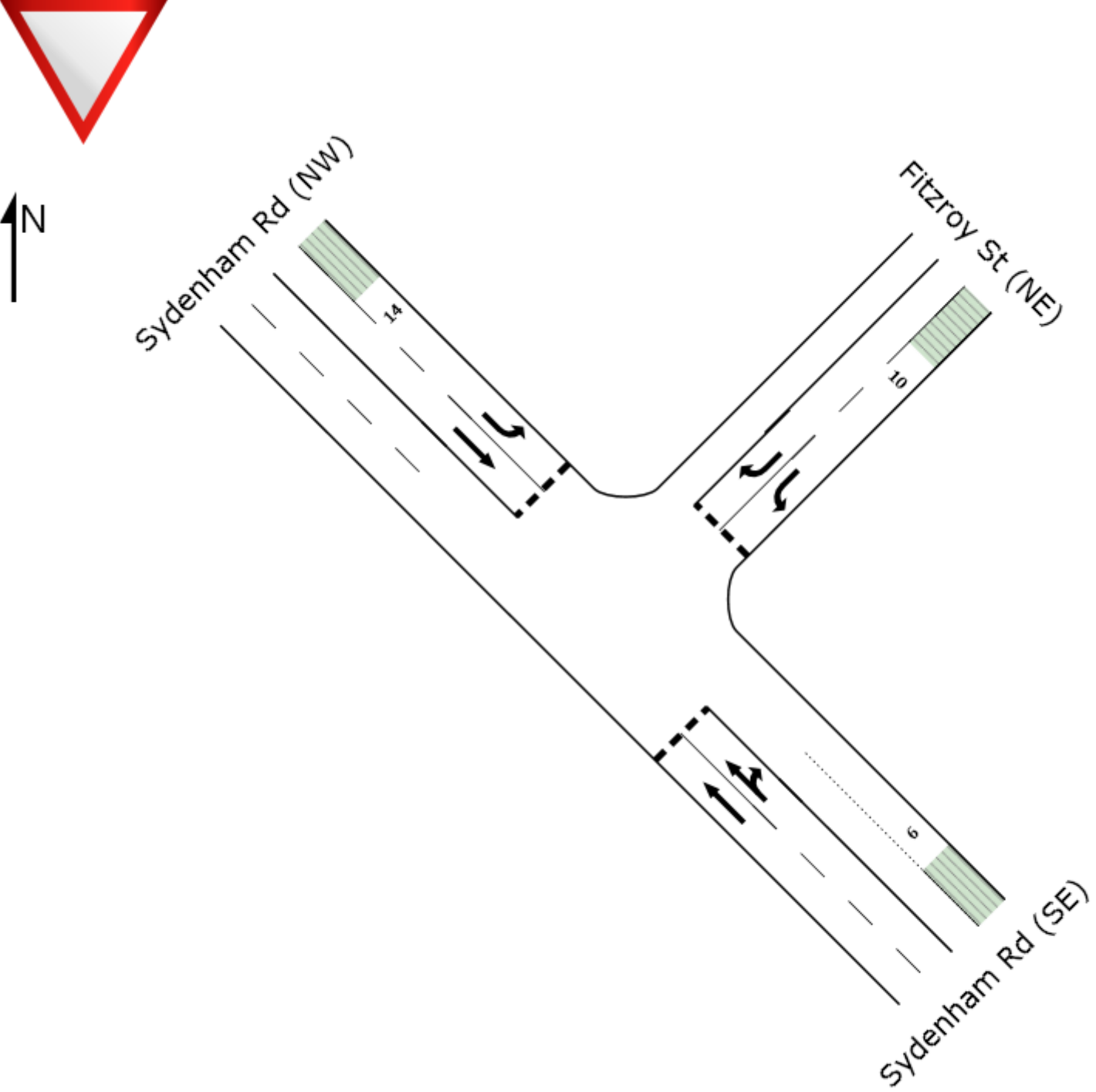
Future Saturday
Edinburgh / Fitzroy
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Edinburgh Rd (SE)																
Lane 1	353	711	0	1063	0.2	1509	0.704	100	6.0	LOS A	11.7	81.9	500	–	0.0	0.0
Approach	353	711	0	1063	0.2		0.704		6.0	LOS A	11.7	81.9				
North West: Edinburgh Rd (NW)																
Lane 1	0	605	31	636	1.0	1031	0.617	100	8.0	LOS A	7.0	49.6	500	–	0.0	0.0
Approach	0	605	31	636	1.0		0.617		8.0	LOS A	7.0	49.6				
South West: Fitzroy St (SW)																
Lane 1	47	0	233	280	0.0	648	0.432	100	15.2	LOS B	3.7	26.0	500	–	0.0	0.0
Approach	47	0	233	280	0.0		0.432		15.2	LOS B	3.7	26.0				
Intersection				1979	0.4		0.704		8.0	LOS A	11.7	81.9				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS B. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

SIDRA INTERSECTION


N
Sydenham Rd (NW)
Fitzroy St (NE)
Sydenham Rd (SE)
14
10
6

LANE SUMMARY

Site: Sydenham_Fitzroy Thu 2010

2010 Thursday PM
Sydenham / Fitzroy
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Sydenham Rd (SE)																
Lane 1	0	437	0	437	0.5	1944	0.225	100	7.0	LOS A	0.0	0.0	500	–	0.0	0.0
Lane 2	0	200	89	290	0.3	1288	0.225	100	11.4	LOS A	2.2	15.7	500	–	0.0	0.0
Approach	0	637	89	726	0.4		0.225		8.7	LOS A	2.2	15.7				
North East: Fitzroy St (NE)																
Lane 1	173	0	0	173	0.6	1849	0.093	100	7.2	LOS A	0.0	0.0	10	Parking	0.0	0.0
Lane 2	0	0	103	103	0.0	1857	0.056	100	7.3	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	173	0	103	276	0.4		0.093		7.2	LOS A	0.0	0.0				
North West: Sydenham Rd (NW)																
Lane 1	65	0	0	65	4.8	1795	0.036	100	7.6	LOS A	0.0	0.0	14	Parking	0.0	0.0
Lane 2	0	512	0	512	0.2	1947	0.263	100	6.9	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	65	512	0	577	0.7		0.263		7.0	LOS A	0.0	0.0				
Intersection				1579	0.5		0.263		7.9	NA	2.2	15.7				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any lane.

SIDRA INTERSECTION

LANE SUMMARY

Site: Sydenham_Fitzroy Sat 2010

2010 Saturday
Sydenham / Fitzroy
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Sydenham Rd (SE)																
Lane 1	0	377	0	377	0.6	1942	0.194	100	7.0	LOS A	0.0	0.0	500	–	0.0	0.0
Lane 2	0	118	89	208	0.4	1070	0.194	100	12.0	LOS A	1.7	11.6	500	–	0.0	0.0
Approach	0	495	89	584	0.5		0.194		8.7	LOS A	1.7	11.6				
North East: Fitzroy St (NE)																
Lane 1	137	0	0	137	0.8	1847	0.074	100	7.2	LOS A	0.0	0.0	10	Parking	0.0	0.0
Lane 2	0	0	118	118	0.0	1857	0.063	100	7.3	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	137	0	118	255	0.4		0.074		7.3	LOS A	0.0	0.0				
North West: Sydenham Rd (NW)																
Lane 1	106	0	0	106	0.0	1857	0.057	100	7.4	LOS A	0.0	0.0	14	Parking	0.0	0.0
Lane 2	0	566	0	566	0.9	1938	0.292	100	7.0	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	106	566	0	673	0.8		0.292		7.0	LOS A	0.0	0.0				
Intersection				1512	0.6		0.292		7.7	NA	1.7	11.6				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any lane.

SIDRA INTERSECTION

LANE SUMMARY

Future Thursday PM
Sydenham / Fitzroy
Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Sydenham Rd (SE)																
Lane 1	0	464	0	464	0.5	1944	0.239	100	7.0	LOS A	0.0	0.0	500	–	0.0	0.0
Lane 2	0	173	104	277	0.3	1162	0.239	100	12.0	LOS A	2.3	16.4	500	–	0.0	0.0
Approach	0	637	104	741	0.4		0.239		8.9	LOS A	2.3	16.4				
North East: Fitzroy St (NE)																
Lane 1	204	0	0	204	0.5	1850	0.110	100	7.2	LOS A	0.0	0.0	10	Parking	0.0	0.0
Lane 2	0	0	138	138	0.0	1857	0.074	100	7.3	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	204	0	138	342	0.3		0.110		7.3	LOS A	0.0	0.0				
North West: Sydenham Rd (NW)																
Lane 1	83	0	0	83	3.8	1808	0.046	100	7.6	LOS A	0.0	0.0	14	Parking	0.0	0.0
Lane 2	0	524	0	524	0.2	1947	0.269	100	6.9	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	83	524	0	607	0.7		0.269		7.0	LOS A	0.0	0.0				
Intersection				1691	0.5		0.269		7.9	NA	2.3	16.4				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.

LANE SUMMARY

Future Saturday
Sydenham / Fitzroy
Giveway / Yield (Two-Way)

Lane Use and Performance

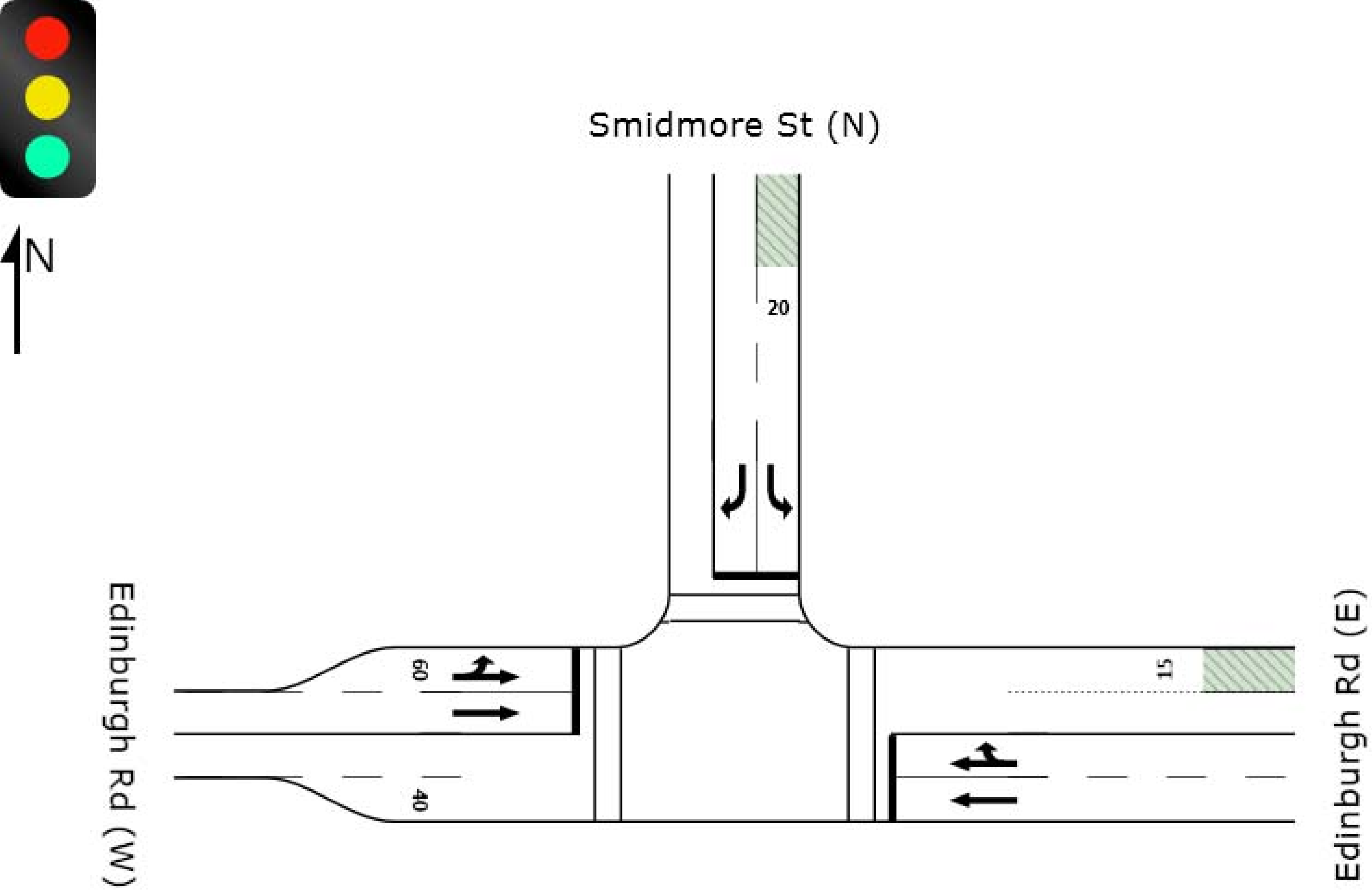
	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Sydenham Rd (SE)																
Lane 1	0	401	0	401	0.6	1942	0.207	100	7.0	LOS A	0.0	0.0	500	–	0.0	0.0
Lane 2	0	93	103	196	0.3	951	0.207	100	12.3	LOS A	1.6	11.5	500	–	0.0	0.0
Approach	0	495	103	598	0.5		0.207		8.7	LOS A	1.6	11.5				
North East: Fitzroy St (NE)																
Lane 1	151	0	0	151	0.7	1848	0.081	100	7.2	LOS A	0.0	0.0	10	Parking	0.0	0.0
Lane 2	0	0	139	139	0.0	1857	0.075	100	7.3	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	151	0	139	289	0.4		0.081		7.3	LOS A	0.0	0.0				
North West: Sydenham Rd (NW)																
Lane 1	127	0	0	127	0.0	1857	0.069	100	7.4	LOS A	0.0	0.0	14	Parking	0.0	0.0
Lane 2	0	566	0	566	0.9	1938	0.292	100	7.0	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	127	566	0	694	0.8		0.292		7.1	LOS A	0.0	0.0				
Intersection				1581	0.6		0.292		7.7	NA	1.6	11.5				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any lane.

SIDRA INTERSECTION



N
Smidmore St (N)
20
60
40
15
Edinburgh Rd (W)
Edinburgh Rd (E)

LANE SUMMARY

Edinburgh Rd x Smidmore St
THURSDAY PM, 2010 Flows
Existing Layout
Signals - Fixed Time Cycle Time = 60 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
East: Edinburgh Rd (E)																
Lane 1	0	194	0	194	0.7	938	0.207	27[6]	9.6	LOS A	4.6	32.1	500	–	0.0	0.0
Lane 2	0	435	43	478	1.3	632	0.756	100	22.5	LOS B	15.1	106.8	500	–	0.0	0.0
Approach	0	628	43	672	1.1		0.756		18.8	LOS B	15.1	106.8				
North: Smidmore St (N)																
Lane 1	27	0	0	27	0.0	291[1]	0.094	100	13.5	LOS A	0.6	4.1	20	Parking	0.0	0.0
Lane 2	0	0	347	347	0.3	432	0.803	100	34.9	LOS C	12.7	88.8	500	–	0.0	0.0
Approach	27	0	347	375	0.3		0.803		33.4	LOS C	12.7	88.8				
West: Edinburgh Rd (W)																
Lane 1	289	0	0	289	1.5	337	0.859	100	40.2	LOS C	11.7	82.6	60	Turn Bay	0.0	21.9
Lane 2	0	139	0	139	0.0	520	0.267	31[5]	19.2	LOS B	4.6	32.2	500	–	0.0	0.0
Approach	289	139	0	428	1.0		0.859		33.4	LOS C	11.7	82.6				
Intersection				1475	0.9		0.859		26.7	LOS B	15.1	106.8				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS C. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect
5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects

PHASING SUMMARY

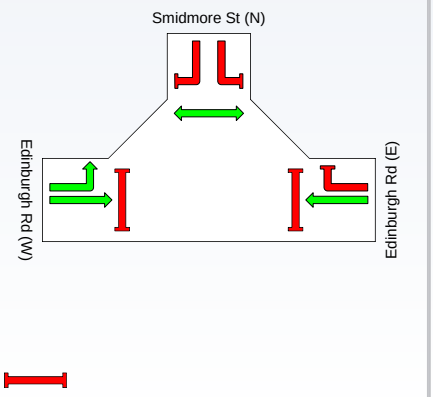
Edinburgh Rd x Smidmore St
THURSDAY PM, 2010 Flows
Existing Layout
Signals - Fixed Time Cycle Time = 60 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Delay)**
Phase times determined by the program
Sequence: Two phase
Input Sequence: A, B, C
Output Sequence: A, B, C

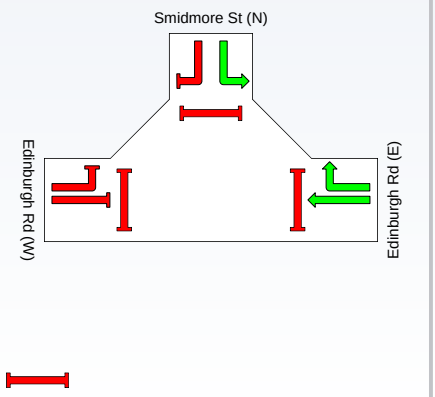
Phase Timing Results

Phase	A	B	C
Green Time (sec)	16	7	19
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	22	13	25
Phase Split	37 %	22 %	42 %

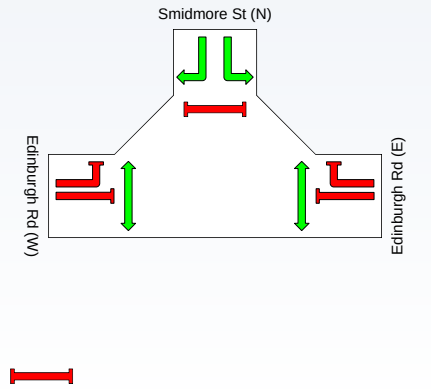
Phase A

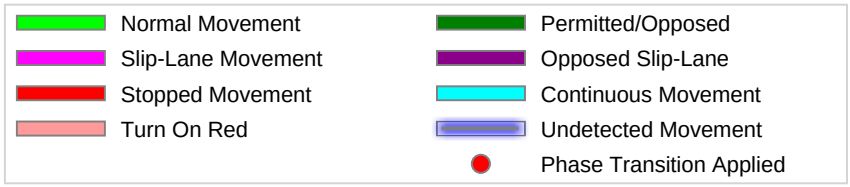


Phase B



Phase C





LANE SUMMARY

Site: 2010 Sat Existing Layout

Edinburgh Rd x Smidmore St
SATURDAY, 2010 Flows
Existing Layout
Signals - Fixed Time Cycle Time = 80 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
East: Edinburgh Rd (E)																
Lane 1	0	178	0	178	1.0	969	0.183	27[6]	11.8	LOS A	5.2	36.6	500	–	0.0	0.0
Lane 2	0	133	47	180	1.3	269	0.671	100	38.9	LOS C	8.8	62.5	500	–	0.0	0.0
Approach	0	311	47	358	1.2		0.671		25.4	LOS B	8.8	62.5				
North: Smidmore St (N)																
Lane 1	39	0	0	39	0.0	215[1]	0.181	100	17.2	LOS B	1.2	8.3	20	Parking	0.0	0.0
Lane 2	0	0	407	407	0.0	534	0.763	100	37.5	LOS C	16.9	118.1	500	–	0.0	0.0
Approach	39	0	407	446	0.0		0.763		35.7	LOS C	16.9	118.1				
West: Edinburgh Rd (W)																
Lane 1	79	0	0	79	0.2	393[1]	0.200	26[5]	29.4	LOS C	3.3	23.3	60	Turn Bay	0.0	0.0
Lane 2	358[0]	167	0	526	0.0	682	0.770	100	29.4	LOS C	20.4	143.0	500	–	0.0	0.0
Approach	437	167	0	604	0.2		0.770		29.4	LOS C	20.4	143.0				
Intersection				1408	0.4		0.770		29.6	LOS C	20.4	143.0				

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS C. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

0 Excess flow from back of an adjacent short lane
1 Reduced capacity due to a short lane effect
5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects

PHASING SUMMARY

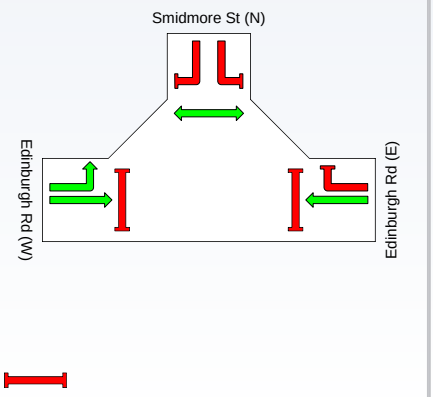
Edinburgh Rd x Smidmore St
SATURDAY, 2010 Flows
Existing Layout
Signals - Fixed Time Cycle Time = 80 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Delay)**
Phase times determined by the program
Sequence: Two phase
Input Sequence: A, B, C
Output Sequence: A, B, C

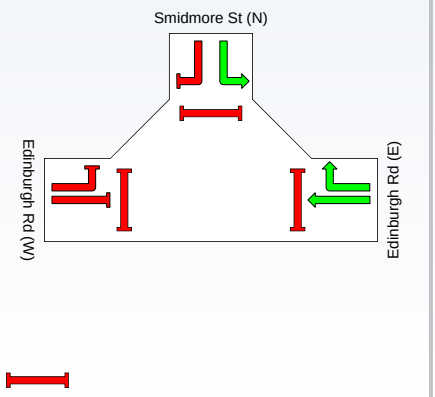
Phase Timing Results

Phase	A	B	C
Green Time (sec)	28	6	28
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	34	12	34
Phase Split	43 %	15 %	43 %

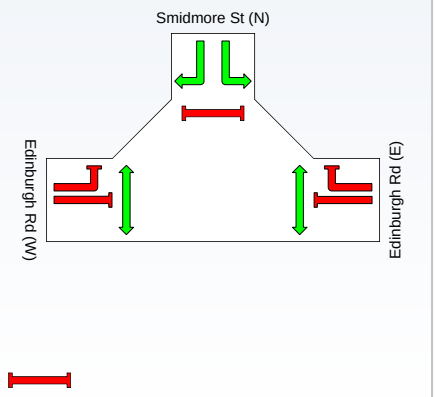
Phase A

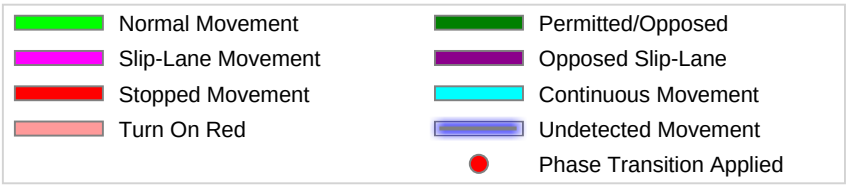


Phase B



Phase C





LANE SUMMARY

Edinburgh Rd x Smidmore St
THURSDAY PM, FUTURE Flows
Existing Layout
Signals - Fixed Time Cycle Time = 60 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
East: Edinburgh Rd (E)																
Lane 1	0	214	0	214	0.6	971	0.220	27[6]	9.1	LOS A	4.9	34.4	500	–	0.0	0.0
Lane 2	0	522	43	565	1.1	700	0.807	100	23.5	LOS B	18.2	128.7	500	–	0.0	0.0
Approach	0	736	43	779	0.9		0.807		19.5	LOS B	18.2	128.7				
North: Smidmore St (N)																
Lane 1	104	0	0	104	0.0	289[1]	0.361	100	13.8	LOS A	2.3	15.8	20	Parking	0.0	1.1
Lane 2	0	0	347	347	0.3	402	0.865	100	39.7	LOS C	13.6	95.5	500	–	0.0	0.0
Approach	104	0	347	452	0.2		0.865		33.7	LOS C	13.6	95.5				
West: Edinburgh Rd (W)																
Lane 1	289	0	0	289	1.5	337	0.859	100	40.2	LOS C	11.7	82.6	60	Turn Bay	0.0	21.9
Lane 2	0	283	0	283	0.0	520	0.545	63[5]	21.0	LOS B	9.1	63.4	500	–	0.0	0.0
Approach	289	283	0	573	0.7		0.859		30.7	LOS C	11.7	82.6				
Intersection				1803	0.7		0.865		26.6	LOS B	18.2	128.7				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS C. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect
5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects

PHASING SUMMARY

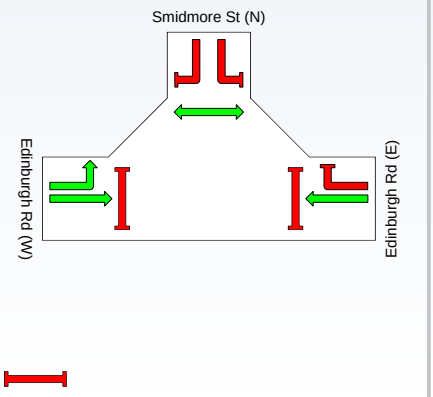
Edinburgh Rd x Smidmore St
THURSDAY PM, FUTURE Flows
Existing Layout
Signals - Fixed Time Cycle Time = 60 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Delay)**
Phase times determined by the program
Sequence: Two phase
Input Sequence: A, B, C
Output Sequence: A, B, C

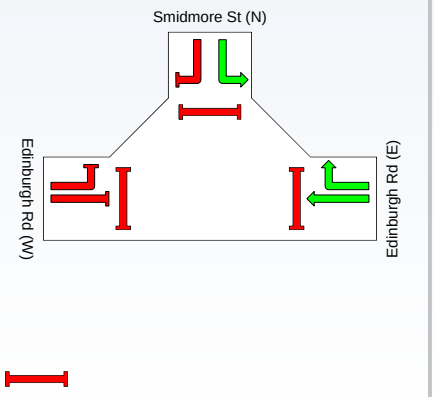
Phase Timing Results

Phase	A	B	C
Green Time (sec)	16	8	18
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	22	14	24
Phase Split	37 %	23 %	40 %

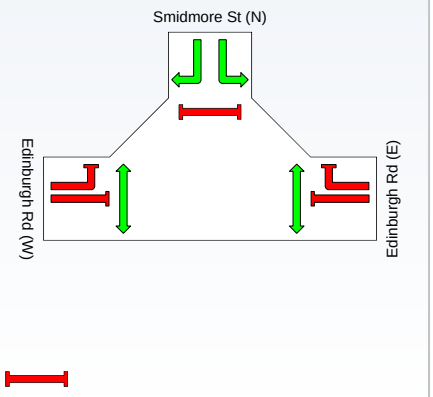
Phase A

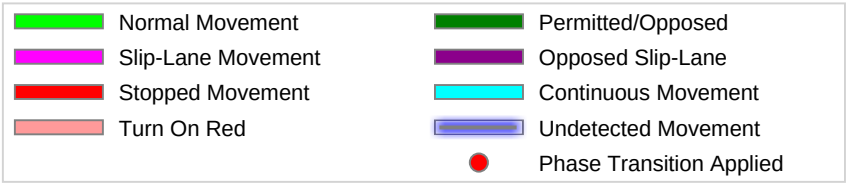


Phase B



Phase C





LANE SUMMARY

Edinburgh Rd x Smidmore St
SATURDAY, FUTURE Flows
Existing Layout
Signals - Fixed Time Cycle Time = 90 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
East: Edinburgh Rd (E)																
Lane 1	0	247	0	247	0.7	1036	0.239	27[6]	11.9	LOS A	7.4	52.0	500	–	0.0	0.0
Lane 2	0	236	47	283	0.9	324	0.874	100	50.2	LOS D	15.6	110.4	500	–	0.0	0.0
Approach	0	483	47	531	0.8		0.874		32.4	LOS C	15.6	110.4				
North: Smidmore St (N)																
Lane 1	162	0	0	162	0.0	181[1]	0.895	100	33.1[8]	LOS C[8]	6.2[8]	43.4[8]	20	Parking	0.0	50.1
Lane 2	0	0	491	491	0.0	516	0.951	100	66.9	LOS E	29.7	208.2	500	–	0.0	0.0
Approach	162	0	491	653	0.0		0.951		58.5	LOS E	29.7	208.2				
West: Edinburgh Rd (W)																
Lane 1	77	0	0	77	0.2	385[1]	0.200	21[5]	28.1	LOS B	3.3	23.4	60	Turn Bay	0.0	0.0
Lane 2	436[0]	323	0	759	0.0	780	0.973	100	64.5	LOS E	49.1	343.8	500	–	0.0	0.0
Approach	513	323	0	836	0.1		0.973		61.2	LOS E	49.1	343.8				
Intersection				2019	0.3		0.973		52.3	LOS D	49.1	343.8				

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS E. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

0 Excess flow from back of an adjacent short lane
1 Reduced capacity due to a short lane effect
5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

SIDRA INTERSECTION

PHASING SUMMARY

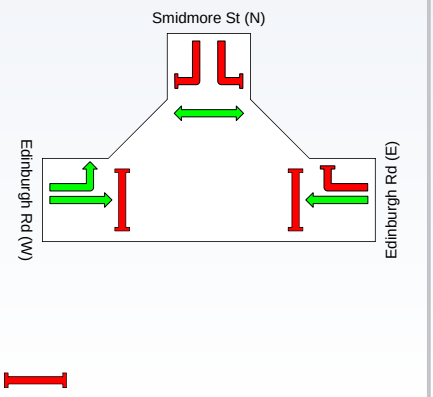
Edinburgh Rd x Smidmore St
SATURDAY, FUTURE Flows
Existing Layout
Signals - Fixed Time Cycle Time = 90 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Delay)**
Phase times determined by the program
Sequence: Two phase
Input Sequence: A, B, C
Output Sequence: A, B, C

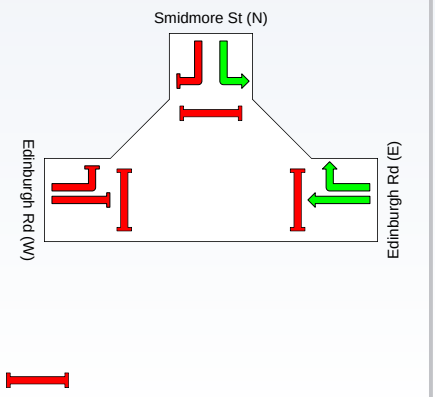
Phase Timing Results

Phase	A	B	C
Green Time (sec)	36	6	30
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	42	12	36
Phase Split	47 %	13 %	40 %

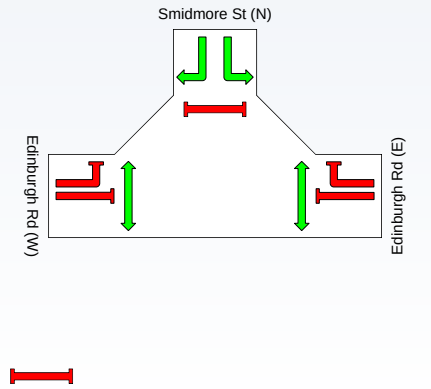
Phase A

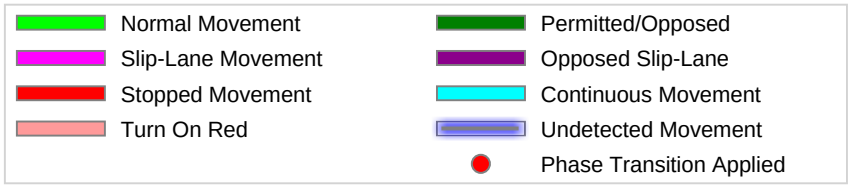


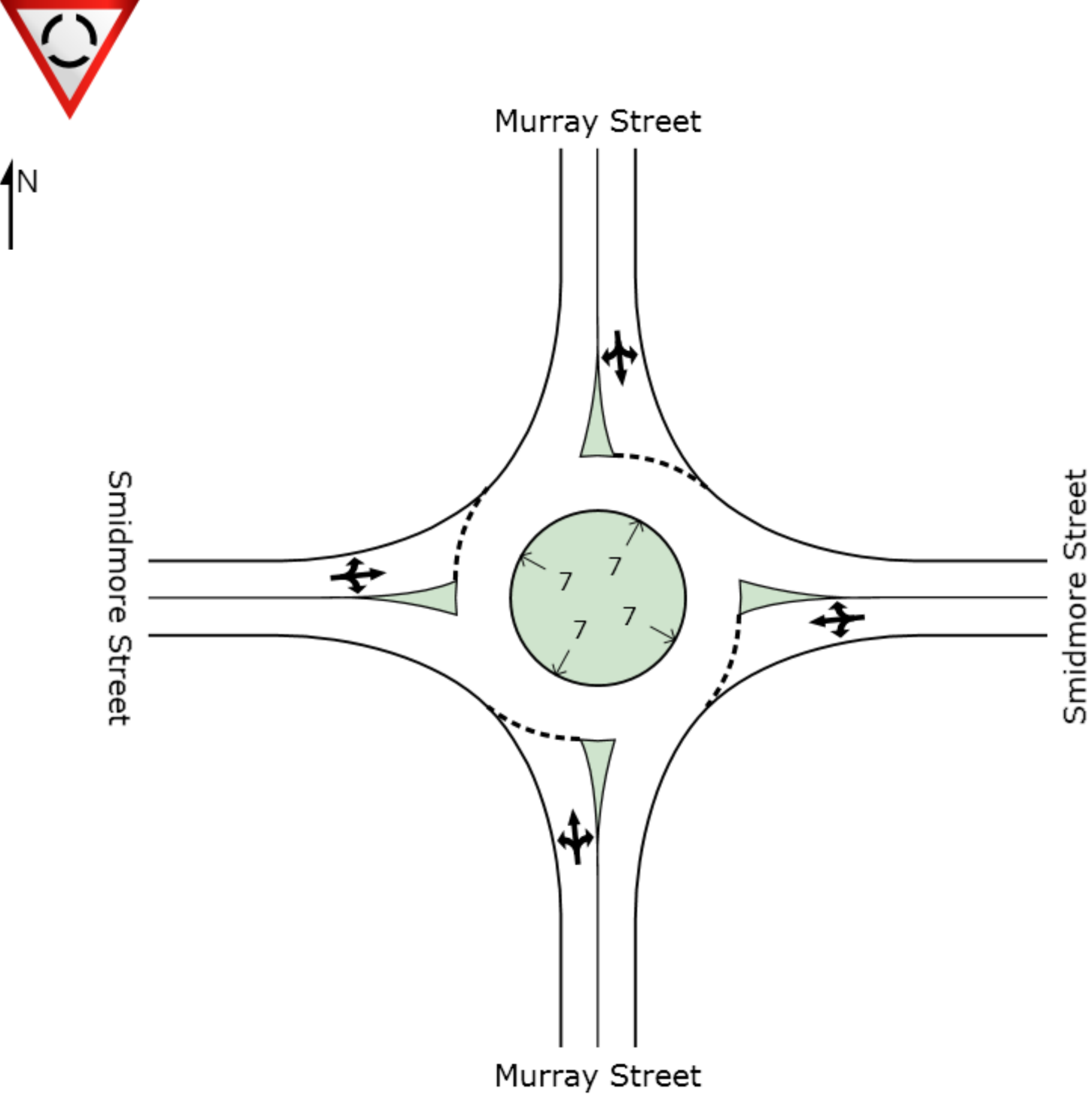
Phase B



Phase C






Murray Street
N
Smidmore Street
Smidmore Street
7
7
7
7
Murray Street

LANE SUMMARY

Site: Smidmore_Murray Thu 2010

2010 Thursday PM
Smidmore / Murray
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Murray Street																
Lane 1	55	124	5	184	0.0	1122	0.164	100	6.4	LOS A	1.1	7.6	77	–	0.0	0.0
Approach	55	124	5	184	0.0		0.164		6.4	LOS A	1.1	7.6				
East: Smidmore Street																
Lane 1	18	27	20	65	0.0	997	0.065	100	8.0	LOS A	0.4	2.8	170	–	0.0	0.0
Approach	18	27	20	65	0.0		0.065		8.0	LOS A	0.4	2.8				
North: Murray Street																
Lane 1	16	102	95	213	0.0	1183	0.180	100	7.5	LOS A	1.2	8.7	170	–	0.0	0.0
Approach	16	102	95	213	0.0		0.180		7.5	LOS A	1.2	8.7				
West: Smidmore Street																
Lane 1	155	28	63	246	4.7	1090	0.226	100	7.9	LOS A	1.6	11.6	165	–	0.0	0.0
Approach	155	28	63	246	4.7		0.226		7.9	LOS A	1.6	11.6				
Intersection				708	1.6		0.226		7.4	LOS A	1.6	11.6				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

LANE SUMMARY

Site: Smidmore_Murray Sat 2010

2010 Saturday
Smidmore / Murray
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Murray Street																
Lane 1	57	165	6	228	0.0	1105	0.207	100	5.8	LOS A	1.4	9.9	77	–	0.0	0.0
Approach	57	165	6	228	0.0		0.207		5.8	LOS A	1.4	9.9				
East: Smidmore Street																
Lane 1	24	19	36	79	0.0	1026	0.077	100	8.2	LOS A	0.5	3.5	170	–	0.0	0.0
Approach	24	19	36	79	0.0		0.077		8.2	LOS A	0.5	3.5				
North: Murray Street																
Lane 1	11	166	107	284	0.0	1251	0.227	100	6.3	LOS A	1.7	11.7	170	–	0.0	0.0
Approach	11	166	107	284	0.0		0.227		6.3	LOS A	1.7	11.7				
West: Smidmore Street																
Lane 1	228	32	106	366	1.1	1194	0.307	100	6.8	LOS A	2.4	16.7	165	–	0.0	0.0
Approach	228	32	106	366	1.1		0.307		6.8	LOS A	2.4	16.7				
Intersection				958	0.4		0.307		6.5	LOS A	2.4	16.7				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

LANE SUMMARY

Site: Smidmore_Murray Thu FUTURE

Future Thursday PM
Smidmore / Murray
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Murray Street																
Lane 1	81	132	5	218	0.0	1067	0.204	100	6.8	LOS A	1.4	9.7	77	–	0.0	0.0
Approach	81	132	5	218	0.0		0.204		6.8	LOS A	1.4	9.7				
East: Smidmore Street																
Lane 1	18	54	20	92	0.0	977	0.094	100	7.8	LOS A	0.6	4.1	170	–	0.0	0.0
Approach	18	54	20	92	0.0		0.094		7.8	LOS A	0.6	4.1				
North: Murray Street																
Lane 1	16	102	119	237	0.0	1191	0.199	100	7.7	LOS A	1.4	9.8	170	–	0.0	0.0
Approach	16	102	119	237	0.0		0.199		7.7	LOS A	1.4	9.8				
West: Smidmore Street																
Lane 1	155	28	63	246	4.7	1076	0.229	100	7.9	LOS A	1.6	11.9	165	–	0.0	0.0
Approach	155	28	63	246	4.7		0.229		7.9	LOS A	1.6	11.9				
Intersection				793	1.5		0.229		7.5	LOS A	1.6	11.9				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

LANE SUMMARY

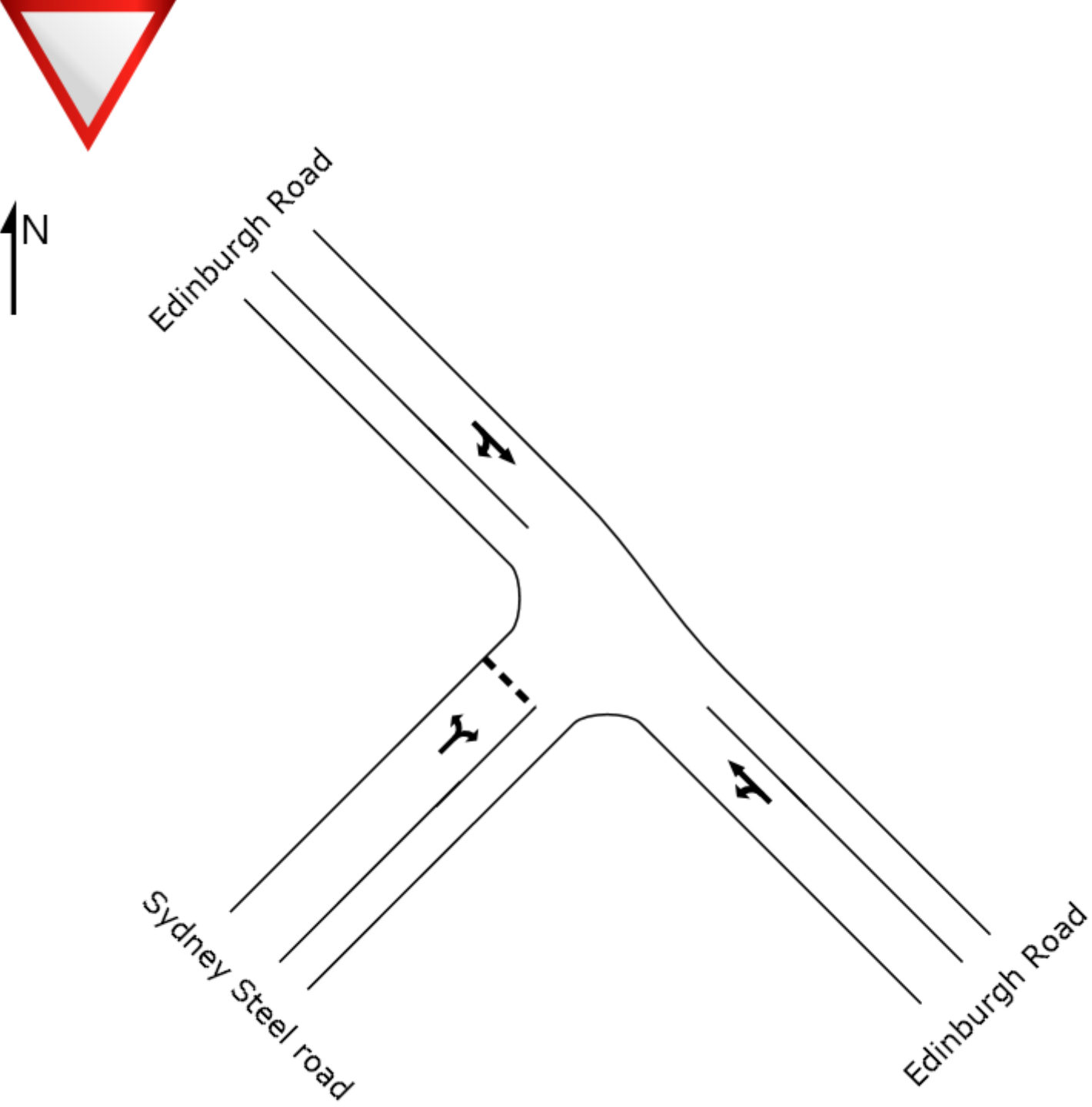
Site: Smidmore_Murray Sat FUTURE

Future Saturday
Smidmore / Murray
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Murray Street																
Lane 1	99	197	6	302	0.0	992	0.305	100	6.9	LOS A	2.2	15.7	77	–	0.0	0.0
Approach	99	197	6	302	0.0		0.305		6.9	LOS A	2.2	15.7				
East: Smidmore Street																
Lane 1	24	61	56	141	0.0	954	0.148	100	8.6	LOS A	1.0	7.2	170	–	0.0	0.0
Approach	24	61	56	141	0.0		0.148		8.6	LOS A	1.0	7.2				
North: Murray Street																
Lane 1	11	206	156	373	0.0	1266	0.294	100	6.5	LOS A	2.3	16.3	170	–	0.0	0.0
Approach	11	206	156	373	0.0		0.294		6.5	LOS A	2.3	16.3				
West: Smidmore Street																
Lane 1	229	32	106	367	0.9	1125	0.326	100	7.1	LOS A	2.6	18.2	165	–	0.0	0.0
Approach	229	32	106	367	0.9		0.326		7.1	LOS A	2.6	18.2				
Intersection				1183	0.3		0.326		7.0	LOS A	2.6	18.2				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.


N
Edinburgh Road
Sydney Steel road
Edinburgh Road

LANE SUMMARY

Edinburgh Road / Sydney Steel Road
THURSDAY PM 2010

Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Edinburgh Road																
Lane 1	9	617	0	626	1.2	1934	0.324	100	0.1	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	9	617	0	626	1.2		0.324		0.1	LOS A	0.0	0.0				
North West: Edinburgh Road																
Lane 1	0	161	6	167	0.0	1870	0.090	100	3.3	LOS A	1.0	6.8	500	–	0.0	0.0
Approach	0	161	6	167	0.0		0.090		3.3	LOS A	1.0	6.8				
South West: Sydney Steel road																
Lane 1	56	0	22	78	1.4	547	0.142	100	11.6	LOS A	0.6	4.4	500	–	0.0	0.0
Approach	56	0	22	78	1.4		0.142		11.6	LOS A	0.6	4.4				
Intersection				872	1.0		0.324		1.7	NA	1.0	6.8				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any lane.

SIDRA INTERSECTION

LANE SUMMARY

Site: 2010 Sat Existing T-intersection

Edinburgh Road / Sydney Steel Road
SATURDAY LUNCH PEAK 2010

Giveway / Yield (Two-Way)

Lane Use and Performance

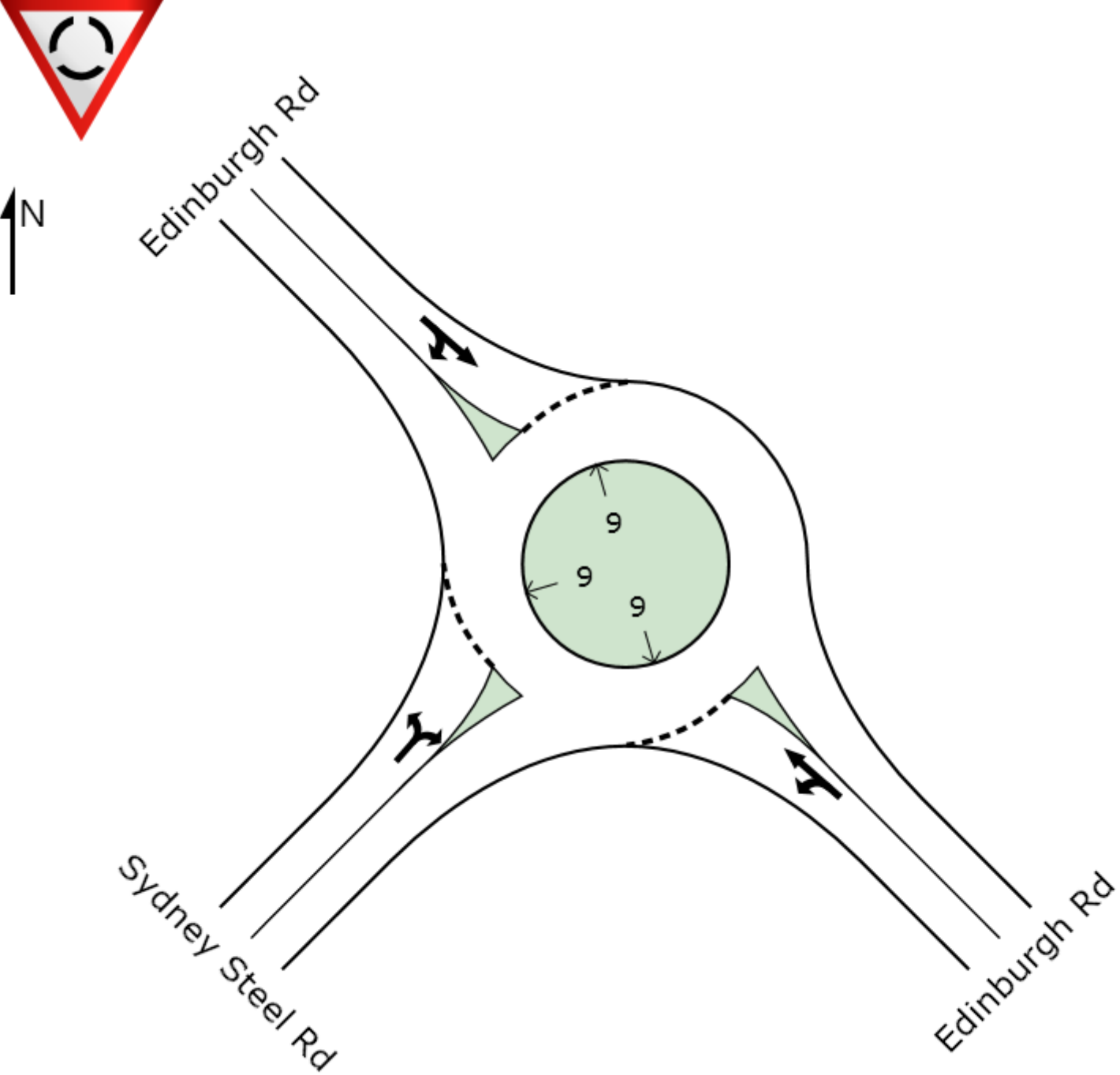
	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Edinburgh Road																
Lane 1	22	346	0	368	1.4	1926	0.191	100	0.4	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	22	346	0	368	1.4		0.191		0.4	LOS A	0.0	0.0				
North West: Edinburgh Road																
Lane 1	0	178	14	192	0.0	1877	0.102	100	1.9	LOS A	0.9	6.0	500	–	0.0	0.0
Approach	0	178	14	192	0.0		0.102		1.9	LOS A	0.9	6.0				
South West: Sydney Steel road																
Lane 1	16	0	16	32	0.0	686	0.046	100	9.4	LOS A	0.2	1.4	500	–	0.0	0.0
Approach	16	0	16	32	0.0		0.046		9.4	LOS A	0.2	1.4				
Intersection				592	0.9		0.191		1.4	NA	0.9	6.0				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any lane.

SIDRA INTERSECTION


N
Edinburgh Rd
9
9
9
Sydney Steel Rd
Edinburgh Rd

LANE SUMMARY

Site: Future Thu PM Prop. Roundabout

SYDNEY STEEL RD_EDINBURGH RD
Thursday PM Peak
Design Layout - Small Roundabout

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Edinburgh Rd																
Lane 1	9	629	0	639	1.2	1291	0.495	100	5.8	LOS A	4.6	32.6	500	–	0.0	0.0
Approach	9	629	0	639	1.2		0.495		5.8	LOS A	4.6	32.6				
North West: Edinburgh Rd																
Lane 1	0	274	114	387	0.0	1500	0.258	100	6.6	LOS A	2.2	15.5	500	–	0.0	0.0
Approach	0	274	114	387	0.0		0.258		6.6	LOS A	2.2	15.5				
South West: Sydney Steel Rd																
Lane 1	56	0	22	78	1.4	667	0.117	100	11.6	LOS A	0.8	6.0	500	–	0.0	0.0
Approach	56	0	22	78	1.4		0.117		11.6	LOS A	0.8	6.0				
Intersection				1104	0.8		0.495		6.5	LOS A	4.6	32.6				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

LANE SUMMARY

Site: Future Sat Prop. Roundabout

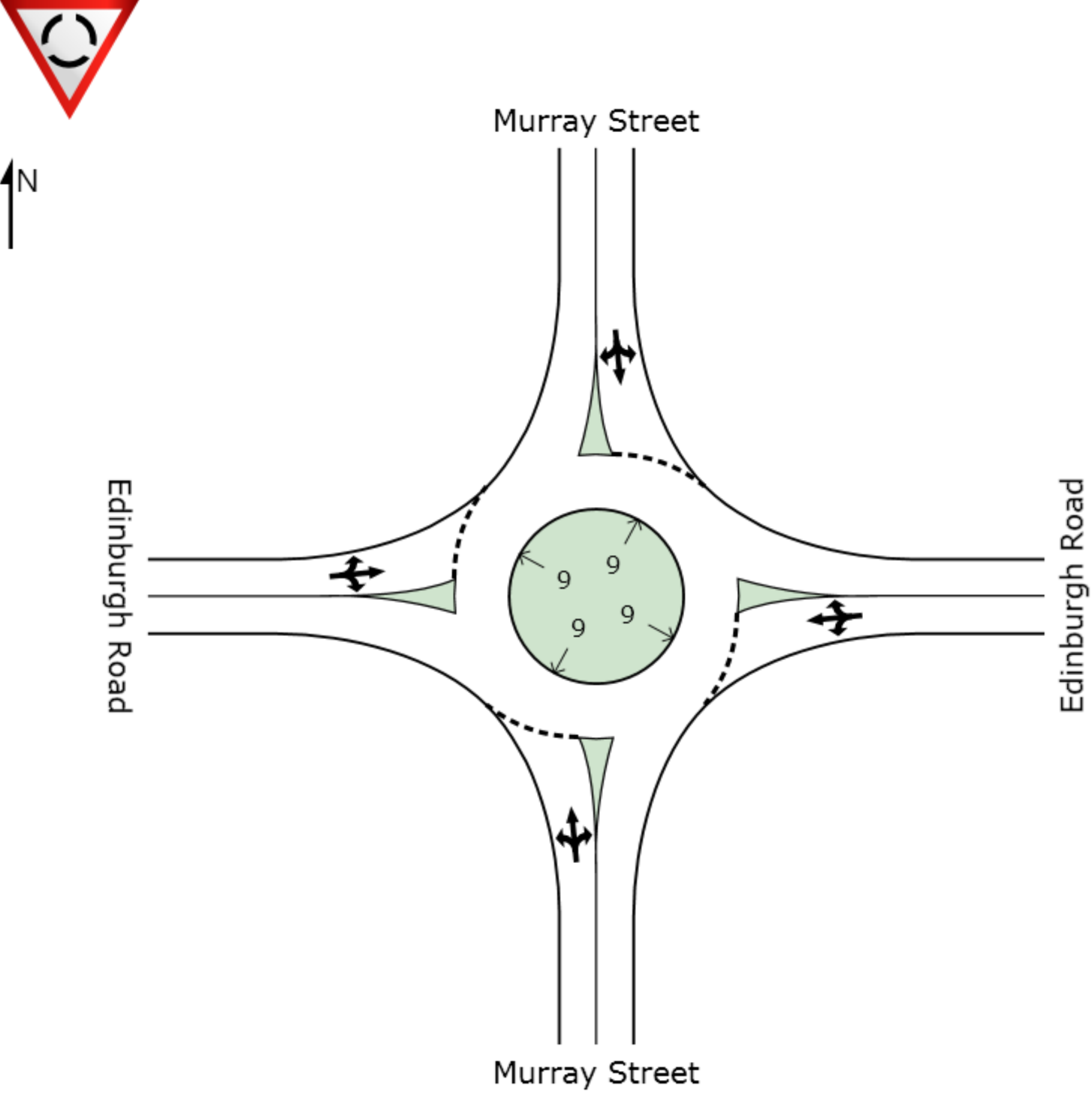
SYDNEY STEEL RD_EDINBURGH RD
Saturday Peak
Design Layout - Small Roundabout

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South East: Edinburgh Rd																
Lane 1	22	346	0	368	1.4	1136	0.324	100	6.2	LOS A	2.4	17.2	500	–	0.0	0.0
Approach	22	346	0	368	1.4		0.324		6.2	LOS A	2.4	17.2				
North West: Edinburgh Rd																
Lane 1	0	284	186	471	0.0	1558	0.302	100	7.1	LOS A	2.6	18.4	500	–	0.0	0.0
Approach	0	284	186	471	0.0		0.302		7.1	LOS A	2.6	18.4				
South West: Sydney Steel Rd																
Lane 1	16	0	16	32	0.0	825	0.038	100	10.2	LOS A	0.2	1.7	500	–	0.0	0.0
Approach	16	0	16	32	0.0		0.038		10.2	LOS A	0.2	1.7				
Intersection				871	0.6		0.324		6.8	LOS A	2.6	18.4				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.


Murray Street
N
Edinburgh Road
Edinburgh Road
9
9
9
9
Murray Street

LANE SUMMARY

Site: Edinburgh_Murray Thu PM 2010

2010 Thursday PM
Edinburgh / Murray
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Murray Street																
Lane 1	14	11	2	26	0.0	613	0.043	100	11.2	LOS A	0.3	2.1	180	–	0.0	0.0
Approach	14	11	2	26	0.0		0.043		11.2	LOS A	0.3	2.1				
East: Edinburgh Road																
Lane 1	1	574	171	745	0.7	1394	0.535	100	6.4	LOS A	5.8	40.5	120	–	0.0	0.0
Approach	1	574	171	745	0.7		0.535		6.4	LOS A	5.8	40.5				
North: Murray Street																
Lane 1	128	1	57	186	5.1	1060	0.176	100	8.1	LOS A	1.2	8.8	500	–	0.0	0.0
Approach	128	1	57	186	5.1		0.176		8.1	LOS A	1.2	8.8				
West: Edinburgh Road																
Lane 1	9	174	3	186	0.6	1065	0.175	100	6.2	LOS A	1.2	8.3	80	–	0.0	0.0
Approach	9	174	3	186	0.6		0.175		6.2	LOS A	1.2	8.3				
Intersection				1144	1.4		0.535		6.8	LOS A	5.8	40.5				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

LANE SUMMARY

Site: Edinburgh_Murray Sat 2010

2010 Saturday
Edinburgh / Murray

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Murray Street																
Lane 1	5	2	3	11	10.0	677	0.016	100	10.7	LOS A	0.1	0.8	180	–	0.0	0.0
Approach	5	2	3	11	10.0		0.016		10.7	LOS A	0.1	0.8				
East: Edinburgh Road																
Lane 1	5	263	237	505	0.2	1268	0.398	100	7.5	LOS A	3.5	24.5	120	–	0.0	0.0
Approach	5	263	237	505	0.2		0.398		7.5	LOS A	3.5	24.5				
North: Murray Street																
Lane 1	197	2	87	286	1.1	1096	0.261	100	8.0	LOS A	2.0	13.8	500	–	0.0	0.0
Approach	197	2	87	286	1.1		0.261		8.0	LOS A	2.0	13.8				
West: Edinburgh Road																
Lane 1	20	159	9	188	0.0	1009	0.187	100	6.8	LOS A	1.3	9.0	80	–	0.0	0.0
Approach	20	159	9	188	0.0		0.187		6.8	LOS A	1.3	9.0				
Intersection				991	0.5		0.398		7.6	LOS A	3.5	24.5				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

LANE SUMMARY

Site: Edinburgh_Murray Thu PM FUTURE

Future Thursday PM
Edinburgh / Murray
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Murray Street																
Lane 1	14	11	2	26	0.0	584	0.045	100	11.7	LOS A	0.3	2.3	180	–	0.0	0.0
Approach	14	11	2	26	0.0		0.045		11.7	LOS A	0.3	2.3				
East: Edinburgh Road																
Lane 1	1	586	197	784	0.7	1396	0.562	100	6.5	LOS A	6.4	45.4	120	–	0.0	0.0
Approach	1	586	197	784	0.7		0.562		6.5	LOS A	6.4	45.4				
North: Murray Street																
Lane 1	128	1	57	186	5.1	960	0.194	100	8.8	LOS A	1.4	10.0	500	–	0.0	0.0
Approach	128	1	57	186	5.1		0.194		8.8	LOS A	1.4	10.0				
West: Edinburgh Road																
Lane 1	17	279	3	299	0.4	1053	0.284	100	6.5	LOS A	2.1	14.8	80	–	0.0	0.0
Approach	17	279	3	299	0.4		0.284		6.5	LOS A	2.1	14.8				
Intersection				1296	1.2		0.562		6.9	LOS A	6.4	45.4				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

LANE SUMMARY

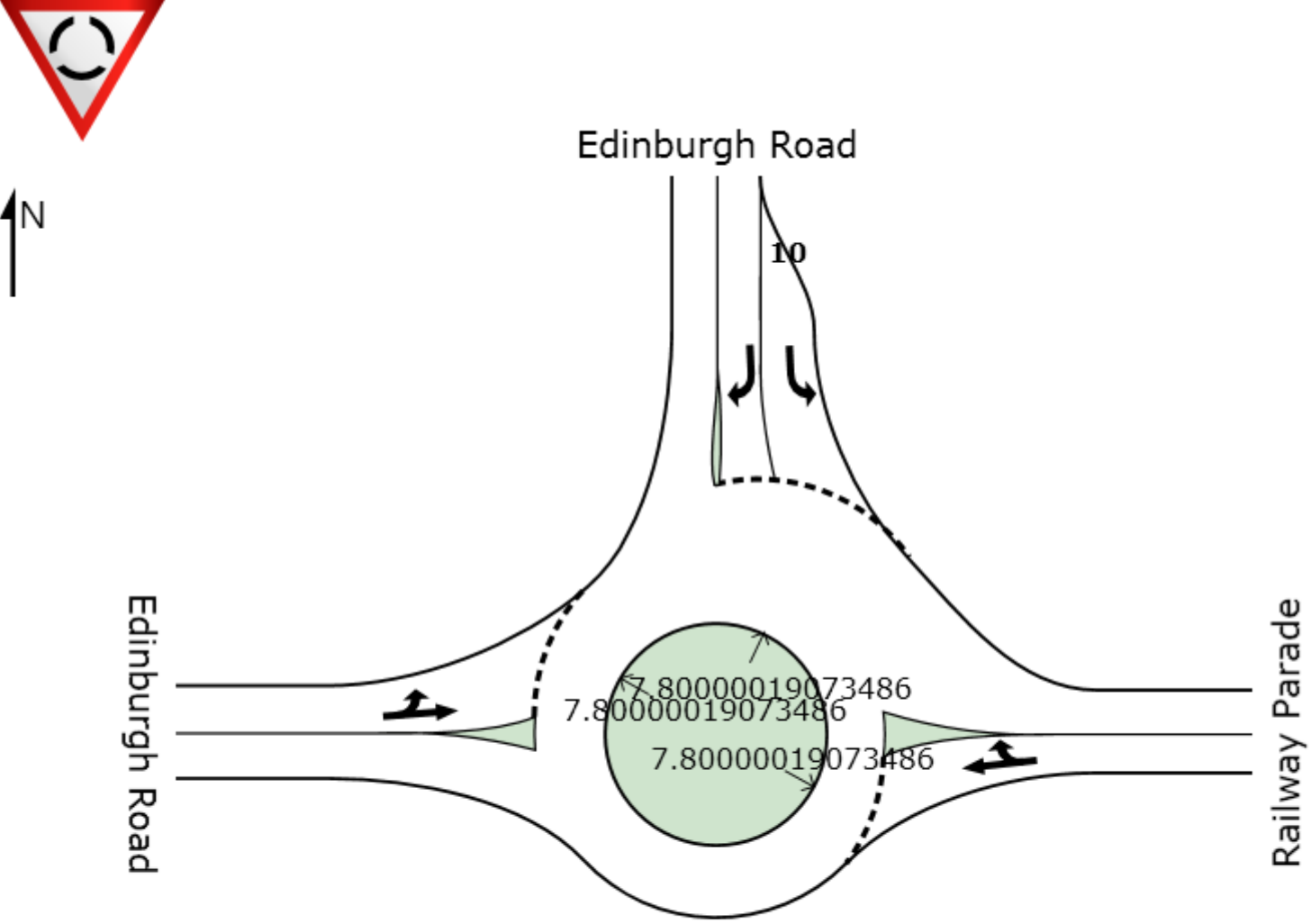
Site: Edinburgh_Murray Sat FUTURE

Future Saturday
Edinburgh / Murray
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Murray Street																
Lane 1	5	2	3	11	10.0	634	0.017	100	11.2	LOS A	0.1	0.8	180	–	0.0	0.0
Approach	5	2	3	11	10.0		0.017		11.2	LOS A	0.1	0.8				
East: Edinburgh Road																
Lane 1	5	263	299	567	0.2	1274	0.445	100	7.8	LOS A	4.2	29.6	120	–	0.0	0.0
Approach	5	263	299	567	0.2		0.445		7.8	LOS A	4.2	29.6				
North: Murray Street																
Lane 1	237	2	87	326	1.0	979	0.333	100	8.6	LOS A	2.6	18.7	500	–	0.0	0.0
Approach	237	2	87	326	1.0		0.333		8.6	LOS A	2.6	18.7				
West: Edinburgh Road																
Lane 1	32	254	9	295	0.0	954	0.309	100	7.4	LOS A	2.3	16.3	80	–	0.0	0.0
Approach	32	254	9	295	0.0		0.309		7.4	LOS A	2.3	16.3				
Intersection				1199	0.4		0.445		7.9	LOS A	4.2	29.6				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.


Edinburgh Road
N
10
Edinburgh Road
7.800000190734 86
7.800000190734 86
7.800000190734 86
Railway Parade

LANE SUMMARY

2010 Thursday PM
Edinburgh / Railway

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
East: Railway Parade																
Lane 1	0	305	56	361	1.2	808	0.447	100	9.8	LOS A	3.9	27.4	100	–	0.0	0.0
Approach	0	305	56	361	1.2		0.447		9.8	LOS A	3.9	27.4				
North: Edinburgh Road																
Lane 1	6	0	0	6	0.0	410[1]	0.015	100	8.5	LOS A	0.0	0.3	10	Turn Bay	0.0	0.0
Lane 2	0	0	433	433	0.2	1325	0.326	100	9.7	LOS A	2.3	16.4	50	–	0.0	0.0
Approach	6	0	433	439	0.2		0.326		9.7	LOS A	2.3	16.4				
West: Edinburgh Road																
Lane 1	135	175	0	309	2.4	1313	0.236	100	6.0	LOS A	1.8	12.7	127	–	0.0	0.0
Approach	135	175	0	309	2.4		0.236		6.0	LOS A	1.8	12.7				
Intersection				1109	1.1		0.447		8.7	LOS A	3.9	27.4				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

1 Reduced capacity due to a short lane effect

SIDRA INTERSECTION

LANE SUMMARY

Site: Edinburgh_Railway Sat 2010

2010 Saturday
Edinburgh / Railway

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
East: Railway Parade																
Lane 1	0	200	66	266	0.8	918	0.290	100	8.6	LOS A	2.3	16.2	100	–	0.0	0.0
Approach	0	200	66	266	0.8		0.290		8.6	LOS A	2.3	16.2				
North: Edinburgh Road																
Lane 1	1	0	0	1	0.0	409[1]	0.003	100	8.5	LOS A	0.0	0.0	10	Turn Bay	0.0	0.0
Lane 2	0	0	301	301	0.3	1301	0.231	100	9.6	LOS A	1.5	10.7	50	–	0.0	0.0
Approach	1	0	301	302	0.3		0.231		9.6	LOS A	1.5	10.7				
West: Edinburgh Road																
Lane 1	211	175	0	385	0.5	1311	0.294	100	6.1	LOS A	2.3	15.9	127	–	0.0	0.0
Approach	211	175	0	385	0.5		0.294		6.1	LOS A	2.3	15.9				
Intersection				954	0.6		0.294		7.9	LOS A	2.3	16.2				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

1 Reduced capacity due to a short lane effect

LANE SUMMARY

Future Thursday PM
Edinburgh / Railway

Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
East: Railway Parade																
Lane 1	0	305	56	361	1.2	771	0.468	100	10.6	LOS A	4.3	30.5	100	–	0.0	0.0
Approach	0	305	56	361	1.2		0.468		10.6	LOS A	4.3	30.5				
North: Edinburgh Road																
Lane 1	6	0	0	6	0.0	398[1]	0.016	100	8.8	LOS A	0.0	0.3	10	Turn Bay	0.0	0.0
Lane 2	0	0	472	472	0.2	1266	0.372	100	10.0	LOS A	2.8	19.6	50	–	0.0	0.0
Approach	6	0	472	478	0.2		0.372		10.0	LOS A	2.8	19.6				
West: Edinburgh Road																
Lane 1	188	227	0	416	1.8	1343	0.310	100	6.0	LOS A	2.6	18.2	127	–	0.0	0.0
Approach	188	227	0	416	1.8		0.310		6.0	LOS A	2.6	18.2				
Intersection				1255	1.0		0.468		8.9	LOS A	4.3	30.5				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

1 Reduced capacity due to a short lane effect

SIDRA INTERSECTION

LANE SUMMARY

Site: Edinburgh_Railway Sat FUTURE

Future Saturday
Edinburgh / Railway

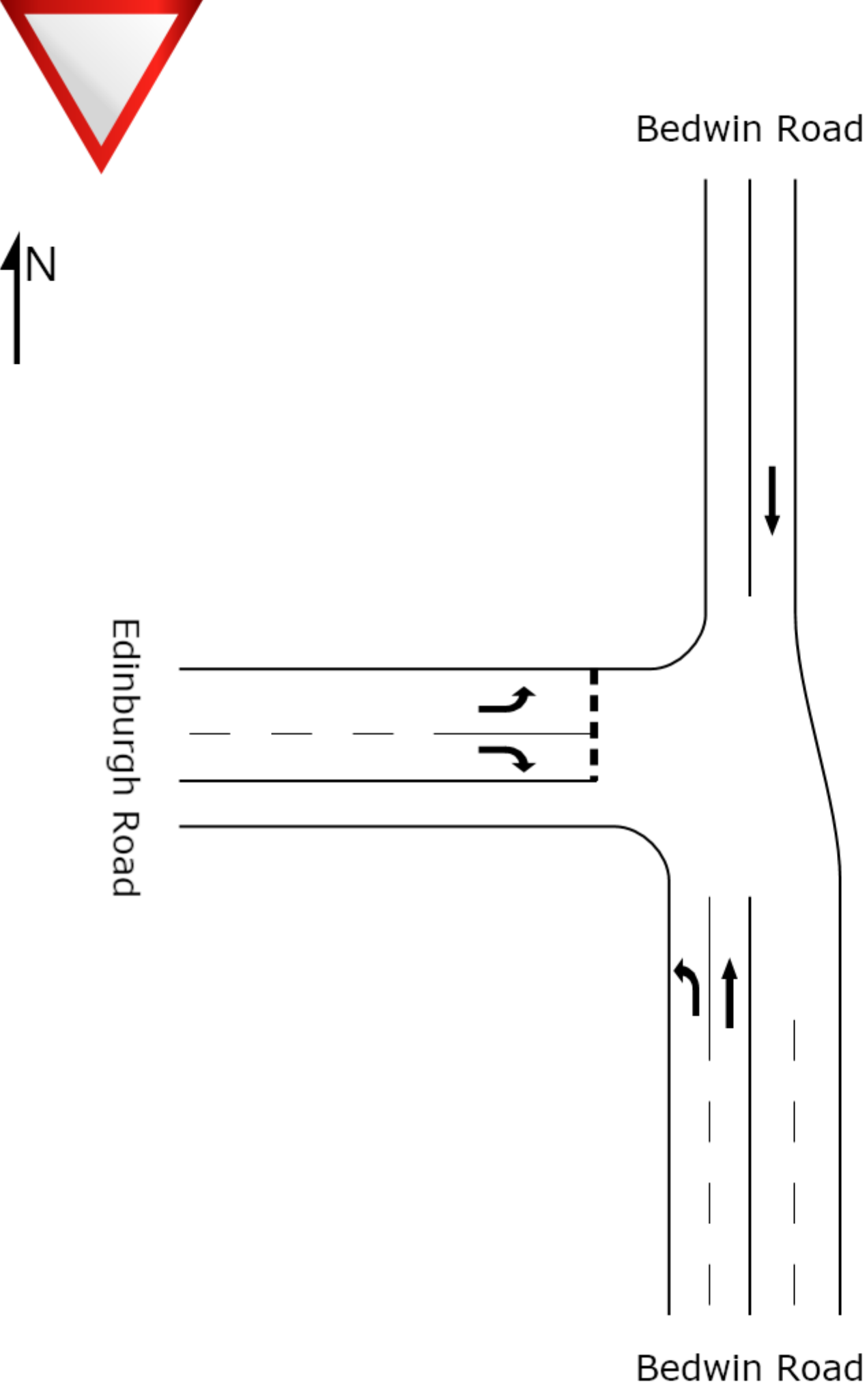
Roundabout

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
East: Railway Parade																
Lane 1	0	200	66	266	0.8	854	0.312	100	9.1	LOS A	2.5	17.8	100	–	0.0	0.0
Approach	0	200	66	266	0.8		0.312		9.1	LOS A	2.5	17.8				
North: Edinburgh Road																
Lane 1	1	0	0	1	0.0	382[1]	0.003	100	9.3	LOS A	0.0	0.1	10	Turn Bay	0.0	0.0
Lane 2	0	0	363	363	0.3	1175	0.309	100	10.3	LOS A	2.2	15.5	50	–	0.0	0.0
Approach	1	0	363	364	0.3		0.309		10.3	LOS A	2.2	15.5				
West: Edinburgh Road																
Lane 1	222	299	0	521	0.4	1337	0.390	100	6.1	LOS A	3.4	23.9	127	–	0.0	0.0
Approach	222	299	0	521	0.4		0.390		6.1	LOS A	3.4	23.9				
Intersection				1152	0.5		0.390		8.1	LOS A	3.4	23.9				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.
Roundabout Capacity Model: SIDRA Standard.

1 Reduced capacity due to a short lane effect


Bedwin Road
N
Edinburgh Road
Bedwin Road

LANE SUMMARY

Site: Bedwin_Edinburgh Thu 2010

2010 Thursday PM
Bedwin / Edinburgh

Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Bedwin Road																
Lane 1	439	0	0	439	0.2	1854	0.237	100	7.5	LOS A	0.0	0.0	200	–	0.0	0.0
Lane 2	0	716	0	716	0.0	1950	0.367	100	0.0	LOS A	0.0	0.0	200	–	0.0	0.0
Approach	439	716	0	1155	0.1		0.367		2.8	LOS A	0.0	0.0				
North: Bedwin Road																
Lane 1	0	584	0	584	0.4	1945	0.300	100	0.0	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	0	584	0	584	0.4		0.300		0.0	LOS A	0.0	0.0				
West: Edinburgh Road																
Lane 1	80	0	0	80	6.6	568	0.141	100	12.5	LOS A	0.6	4.7	66	–	0.0	0.0
Lane 2	0	0	111	111	1.9	270	0.409	100	24.8	LOS B	2.0	14.4	52	–	0.0	0.0
Approach	80	0	111	191	3.9		0.409		19.7	LOS B	2.0	14.4				
Intersection				1929	0.5		0.409		3.6	NA	2.0	14.4				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Lane): LOS B. LOS Method for individual lanes: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any lane.

SIDRA INTERSECTION

LANE SUMMARY

Site: Bedwin_Edinburgh Sat 2010

2010 Saturday
Bedwin / Edinburgh

Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Bedwin Road																
Lane 1	302	0	0	302	0.0	1857	0.163	100	7.4	LOS A	0.0	0.0	200	–	0.0	0.0
Lane 2	0	644	0	644	0.7	1942	0.332	100	0.0	LOS A	0.0	0.0	200	–	0.0	0.0
Approach	302	644	0	946	0.4		0.332		2.4	LOS A	0.0	0.0				
North: Bedwin Road																
Lane 1	0	553	0	553	0.6	1943	0.284	100	0.0	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	0	553	0	553	0.6		0.284		0.0	LOS A	0.0	0.0				
West: Edinburgh Road																
Lane 1	102	0	0	102	0.0	663	0.154	100	11.3	LOS A	0.7	5.0	66	–	0.0	0.0
Lane 2	0	0	175	175	0.6	323	0.540	100	24.2	LOS B	3.1	22.0	52	–	0.0	0.0
Approach	102	0	175	277	0.4		0.540		19.5	LOS B	3.1	22.0				
Intersection				1776	0.5		0.540		4.3	NA	3.1	22.0				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.

Level of Service (Worst Lane): LOS B. LOS Method for individual lanes: Delay (RTA NSW).

Approach LOS values are based on the worst delay for any lane.

SIDRA INTERSECTION

LANE SUMMARY

Site: Bedwin_Edinburgh Thu FUTURE

Future Thursday PM
Bedwin / Edinburgh

Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Bedwin Road																
Lane 1	478	0	0	478	0.2	1854	0.258	100	7.5	LOS A	0.0	0.0	200	–	0.0	0.0
Lane 2	0	737	0	737	0.0	1950	0.378	100	0.0	LOS A	0.0	0.0	200	–	0.0	0.0
Approach	478	737	0	1215	0.1		0.378		2.9	LOS A	0.0	0.0				
North: Bedwin Road																
Lane 1	0	579	0	579	0.4	1945	0.298	100	0.0	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	0	579	0	579	0.4		0.298		0.0	LOS A	0.0	0.0				
West: Edinburgh Road																
Lane 1	87	0	0	87	6.0	553	0.158	100	12.8	LOS A	0.7	5.2	66	–	0.0	0.0
Lane 2	0	0	157	157	1.3	262	0.598	100	30.0	LOS C	3.4	23.9	52	–	0.0	0.0
Approach	87	0	157	244	3.0		0.598		23.8	LOS C	3.4	23.9				
Intersection				2038	0.5		0.598		4.6	NA	3.4	23.9				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Lane): LOS C. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.

LANE SUMMARY

Site: Bedwin_Edinburgh Sat FUTURE

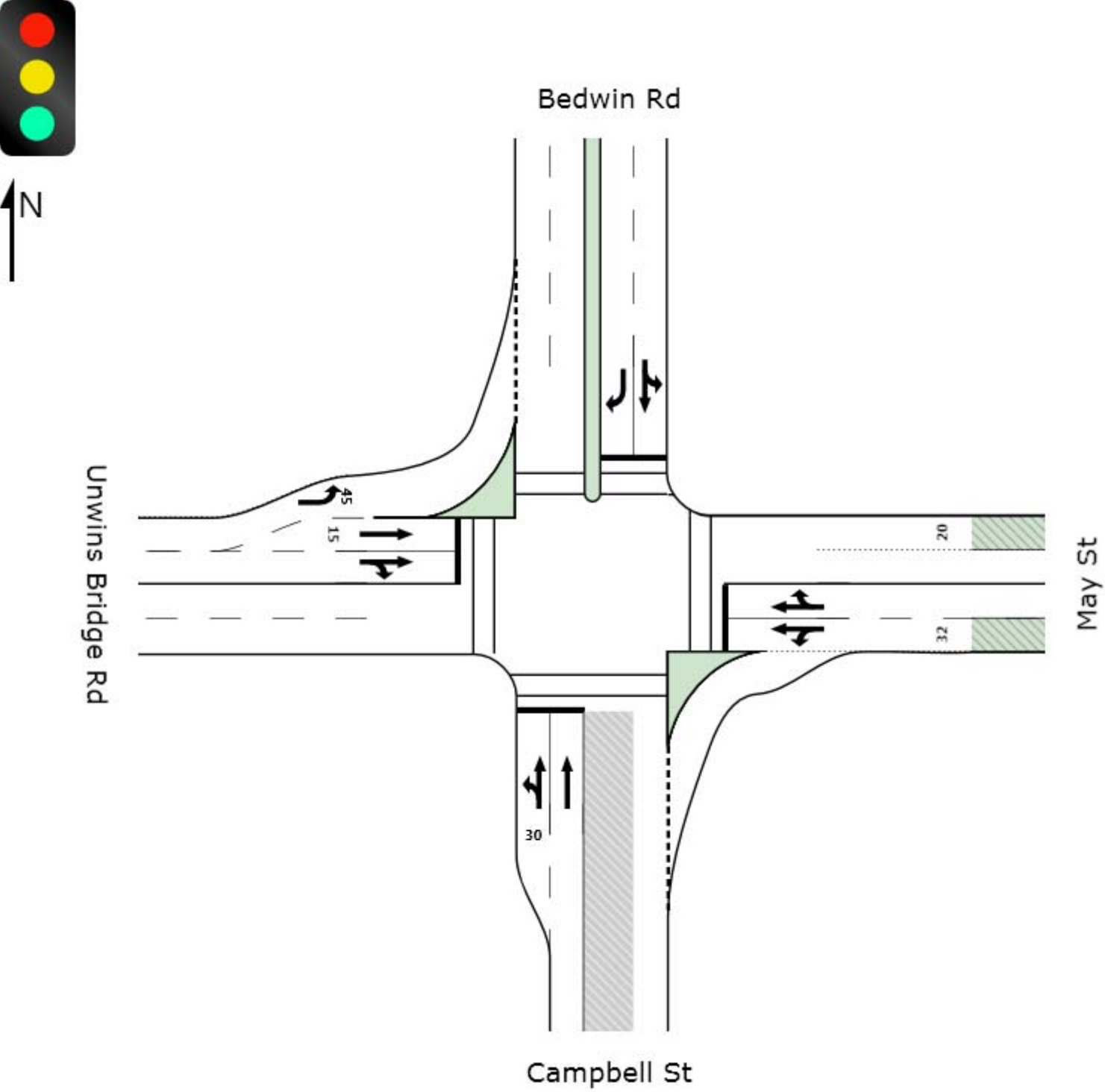
Future Saturday
Bedwin / Edinburgh

Giveway / Yield (Two-Way)

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Bedwin Road																
Lane 1	364	0	0	364	0.0	1857	0.196	100	7.4	LOS A	0.0	0.0	200	–	0.0	0.0
Lane 2	0	687	0	687	0.6	1942	0.354	100	0.0	LOS A	0.0	0.0	200	–	0.0	0.0
Approach	364	687	0	1052	0.4		0.354		2.6	LOS A	0.0	0.0				
North: Bedwin Road																
Lane 1	0	534	0	534	0.6	1943	0.275	100	0.0	LOS A	0.0	0.0	500	–	0.0	0.0
Approach	0	534	0	534	0.6		0.275		0.0	LOS A	0.0	0.0				
West: Edinburgh Road																
Lane 1	114	0	0	114	0.0	617	0.184	100	11.9	LOS A	0.9	6.0	66	–	0.0	0.0
Lane 2	0	0	175	175	0.6	310	0.563	100	25.5	LOS B	3.3	23.1	52	–	0.0	0.0
Approach	114	0	175	288	0.4		0.563		20.1	LOS B	3.3	23.1				
Intersection				1874	0.4		0.563		4.5	NA	3.3	23.1				

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Lane): LOS B. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on the worst delay for any lane.


Bedwin Rd
N
Unwins Bridge Rd
45
15
20
May St
32
30
Campbell St

LANE SUMMARY

UNWINS BRIDGE RD, BEDWIN RD, MAY ST & CAMPBELL ST
THURSDAY EVENING PEAK, 2010 TRAFFIC FLOWS
EXISTING INTERSECTION OPERATION
Signals - Fixed Time Cycle Time = 110 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Campbell St																
Lane 1	106	11	0	117	0.0	147[1]	0.798	100	59.1	LOS E	8.1	52.5	30	Turn Bay	0.0	35.3
Lane 2	0	226	0	226	0.0	283	0.798	100	54.0	LOS D	14.2	92.1	500	–	0.0	0.0
Approach	106	237	0	343	0.0		0.798		55.8	LOS D	14.2	92.1				
East: May St																
Lane 1	31	272	0	302	0.0	302[1]	1.000[3]	99[5]	16.2[8]	LOS B[8]	9.8[8]	63.5[8]	32	Parking	0.0	50.4
Lane 2	0	245	312	557	0.4	549	1.014	100	105.9	LOS F	52.0	339.3	500	–	0.0	0.0
Approach	31	517	312	859	0.2		1.014		74.4	LOS F	52.0	339.3				
North: Bedwin Rd																
Lane 1	185	329	0	515	0.8	620	0.830	100	45.3	LOS D	28.2	184.7	500	–	0.0	0.0
Lane 2	0	0	323	323	0.0	313	1.032	100	85.1	LOS F	26.2	170.5	500	–	0.0	0.0
Approach	185	329	323	838	0.5		1.032		60.7	LOS E	28.2	184.7				
West: Unwins Bridge Rd																
Lane 1	609	0	0	609	0.0	755[1]	0.807	100	16.0	LOS B	12.3	80.0	45	Parking	0.0	45.0
Lane 2	0	12	0	12	0.4	153[1]	0.076	22[6]	11.0	LOS A	0.4	2.7	15	Turn Bay	0.0	0.0
Lane 3	0	274	23	297	0.3	860	0.345	100	18.2	LOS B	11.2	73.0	20	–	0.0	100.0
Approach	609	285	23	918	0.1		0.807		16.7	LOS B	12.3	80.0				
Intersection				2958	0.2		1.032		50.4	LOS D	52.0	339.3				

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS F. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect
3 x = 1.00 due to short lane.
5 Lane underutilisation determined by program
6 Lane underutilisation due to downstream effects
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

PHASING SUMMARY

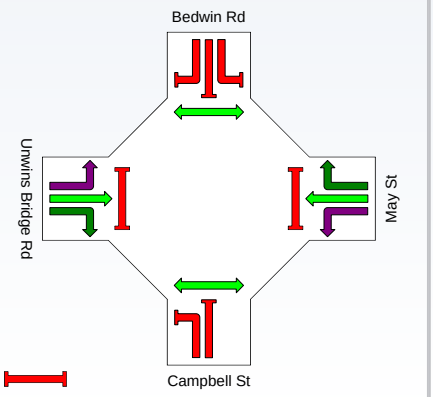
UNWINS BRIDGE RD, BEDWIN RD, MAY ST & CAMPBELL ST
THURSDAY EVENING PEAK, 2010 TRAFFIC FLOWS
EXISTING INTERSECTION OPERATION
Signals - Fixed Time Cycle Time = 110 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Degree of Saturation)**
Phase times determined by the program
Sequence: Sequence 1
Input Sequence: A, B, F
Output Sequence: A, B, F

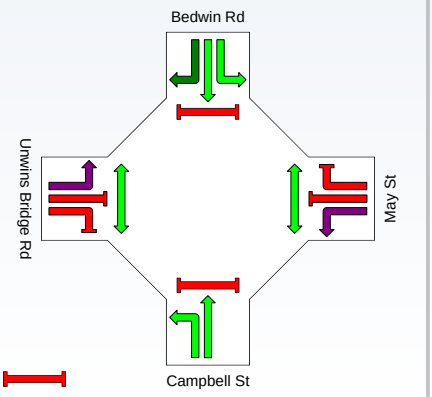
Phase Timing Results

Phase	A	B	F
Green Time (sec)	62	16	14
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	68	22	20
Phase Split	62 %	20 %	18 %

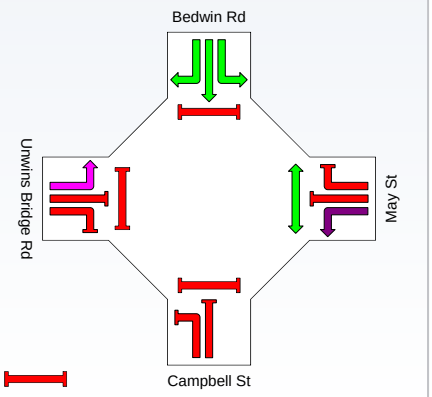
Phase A

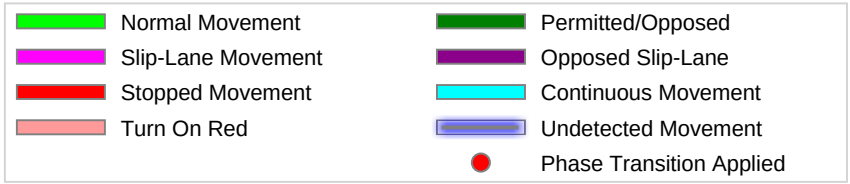


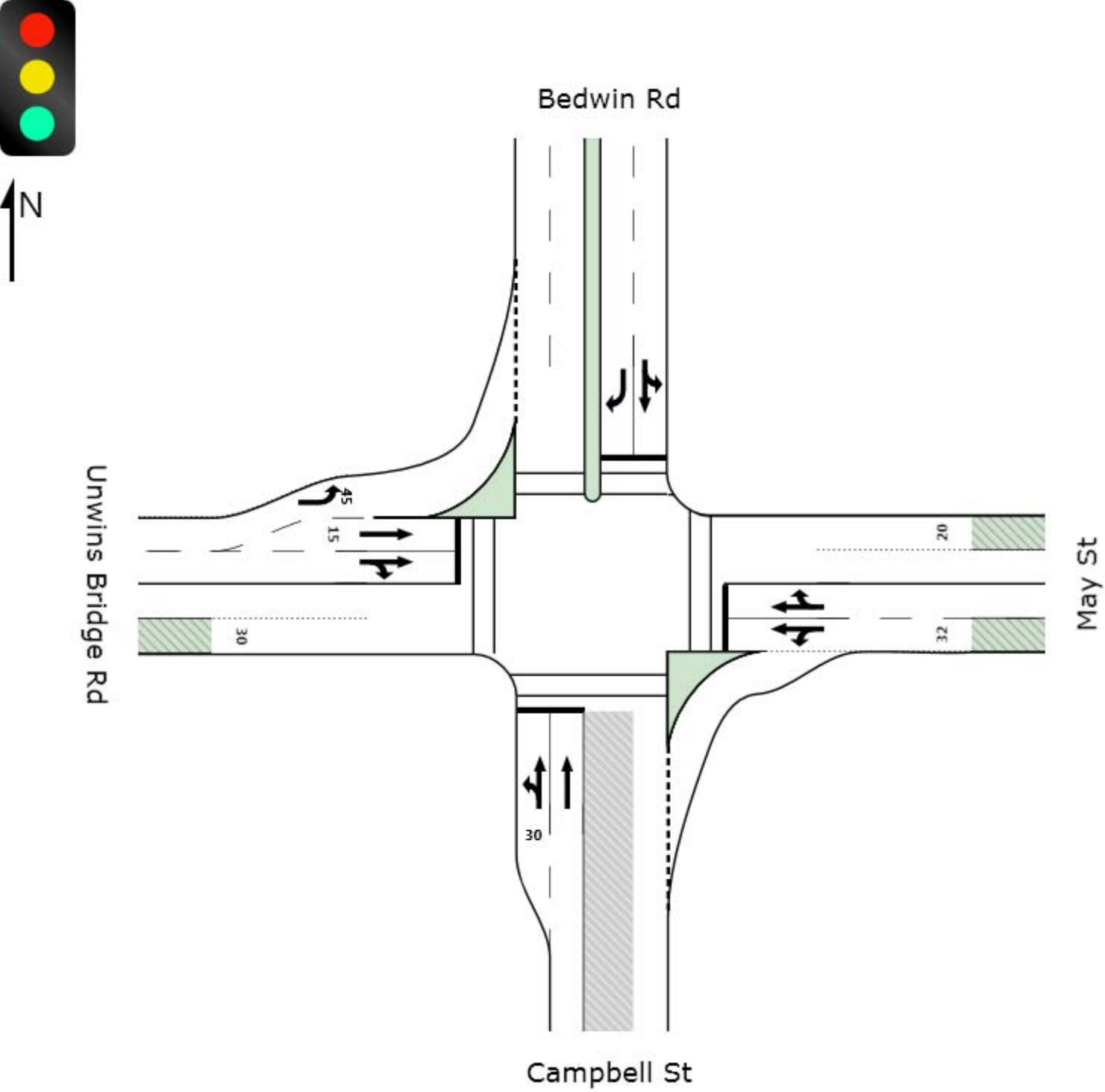
Phase B



Phase F






Bedwin Rd
N
Unwins Bridge Rd
45
15
30
20
32
May St
30
Campbell St

LANE SUMMARY

UNWINS BRIDGE RD, BEDWIN RD, MAY ST & CAMPBELL ST
SATURDAY MIDDAY PEAK, 2010 TRAFFIC FLOWS
EXISTING INTERSECTION OPERATION
Signals - Fixed Time Cycle Time = 140 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Campbell St																
Lane 1	33	3	0	36	0.2	115[1]	0.310	100	67.1	LOS E	3.2	21.1	30	Turn Bay	0.0	0.0
Lane 2	0	68	0	68	3.0	218	0.310	100	62.5	LOS E	5.8	38.9	500	–	0.0	0.0
Approach	33	71	0	103	2.0		0.310		64.1	LOS E	5.8	38.9				
East: May St																
Lane 1	26	40	0	66	0.0	288[1]	0.231	25[6]	9.4	LOS A	1.8	11.5	32	Parking	0.0	0.0
Lane 2	0	255	277	531	0.6	583	0.911	100	60.3	LOS E	42.4	277.4	500	–	0.0	0.0
Approach	26	295	277	598	0.5		0.911		54.6	LOS D	42.4	277.4				
North: Bedwin Rd																
Lane 1	258	306	0	564	0.6	621	0.909	100	67.0	LOS E	43.0	281.3	500	–	0.0	0.0
Lane 2	0	0	407	407	0.0	449	0.907	100	79.2	LOS F	28.5	185.1	500	–	0.0	0.0
Approach	258	306	407	972	0.3		0.909		72.1	LOS F	43.0	281.3				
West: Unwins Bridge Rd																
Lane 1	588	0	0	588	0.0	786[1]	0.748	100	9.1	LOS A	7.8	51.0	45	Parking	0.0	8.8
Lane 2	0	9	0	9	0.4	129[1]	0.071	22[6]	12.5	LOS A	0.4	2.6	15	Turn Bay	0.0	0.0
Lane 3	0	272	28	300	0.3	934	0.321	100	18.8	LOS B	12.6	82.1	20	–	0.0	100.0
Approach	588	281	28	898	0.1		0.748		12.4	LOS A	12.6	82.1				
Intersection				2571	0.4		0.911		46.9	LOS D	43.0	281.3				

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS F. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect
6 Lane underutilisation due to downstream effects

SIDRA INTERSECTION

PHASING SUMMARY

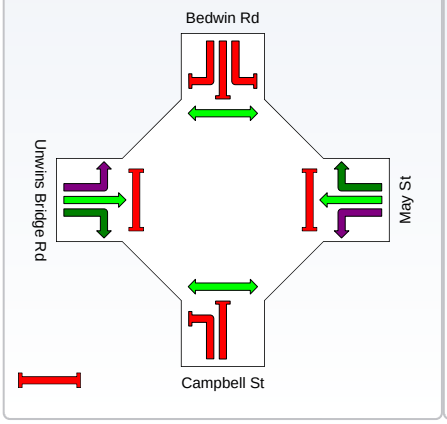
UNWINS BRIDGE RD, BEDWIN RD, MAY ST & CAMPBELL ST
SATURDAY MIDDAY PEAK, 2010 TRAFFIC FLOWS
EXISTING INTERSECTION OPERATION
Signals - Fixed Time Cycle Time = 140 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Degree of Saturation)**
Phase times determined by the program
Sequence: Sequence 1
Input Sequence: A, B, F
Output Sequence: A, B, F

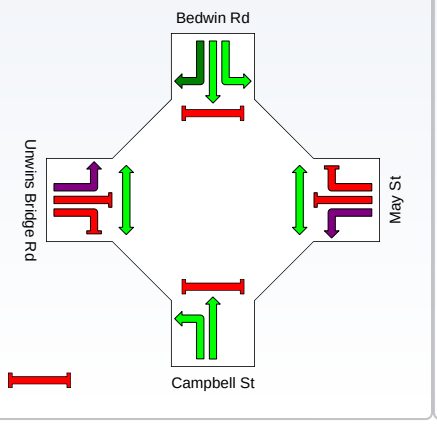
Phase Timing Results

Phase	A	B	F
Green Time (sec)	82	16	24
Yellow Time (sec)	4	4	4
All-Red Time (sec)	2	2	2
Phase Time (sec)	88	22	30
Phase Split	63 %	16 %	21 %

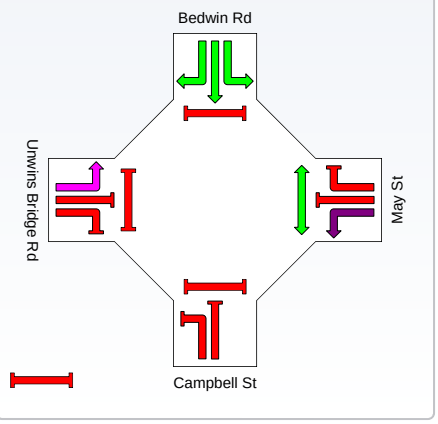
Phase A

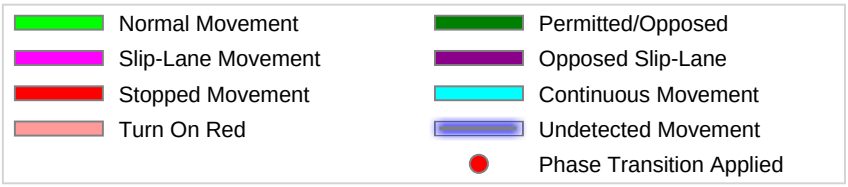


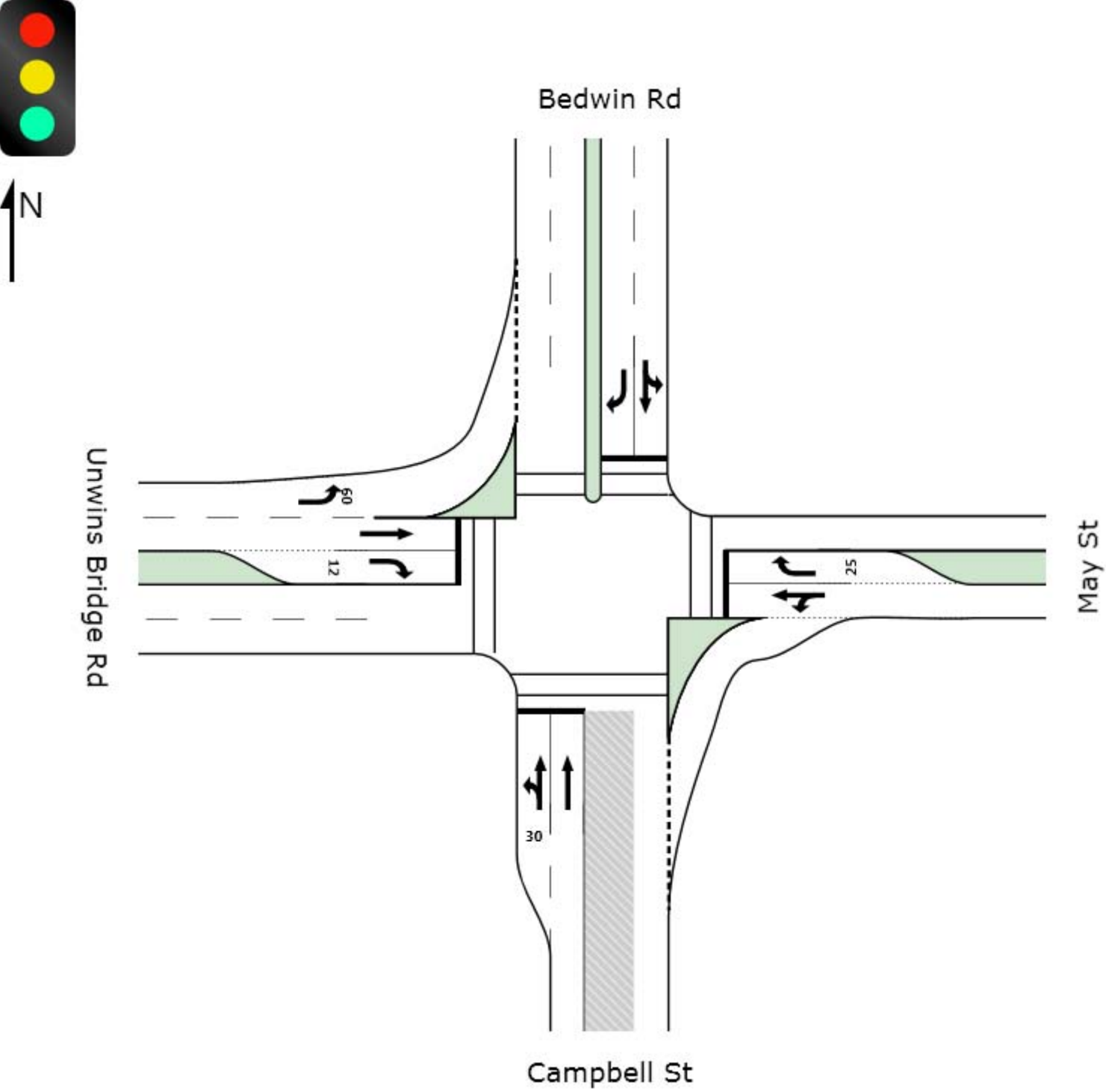
Phase B



Phase F






Bedwin Rd
N
Unwins Bridge Rd
60
12
25
May St
30
Campbell St

LANE SUMMARY

Site: THU PM FUTURE, Imp. Scheme

UNWINS BRIDGE RD, BEDWIN RD, MAY ST & CAMPBELL ST
THURSDAY EVENING PEAK, FUTURE TRAFFIC FLOWS
IMPROVEMENT SCHEME INTERSECTION OPERATION
Signals - Fixed Time Cycle Time = 70 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Campbell St																
Lane 1	106	23	0	130	0.0	242[1]	0.535	100	30.0	LOS C	5.2	33.6	30	Turn Bay	0.0	7.8
Lane 2	0	238	0	238	0.0	445	0.535	100	26.3	LOS B	9.1	59.0	500	–	0.0	0.0
Approach	106	261	0	367	0.0		0.535		27.6	LOS B	9.1	59.0				
East: May St																
Lane 1	31	517	24[0]	571	0.0	798	0.716	100	22.8	LOS B	17.8	115.4	500	–	0.0	0.0
Lane 2	0	0	320	320	0.6	320	1.000[3]	100	31.3[8]	LOS C[8]	9.8[8]	64.3[8]	25	Turn Bay	0.0	75.3
Approach	31	517	344	892	0.2		1.000		25.8	LOS B	17.8	115.4				
North: Bedwin Rd																
Lane 1	225	366	0	592	0.7	816	0.725	100	21.7	LOS B	18.3	119.5	500	–	0.0	0.0
Lane 2	0	0	357	357	0.0	374	0.955	100	60.9	LOS E	17.4	112.9	500	–	0.0	0.0
Approach	225	366	357	948	0.4		0.955		36.4	LOS C	18.3	119.5				
West: Unwins Bridge Rd																
Lane 1	633	0	0	633	0.0	912[1]	0.694	100	10.2	LOS A	9.6	62.1	60	Parking	0.0	6.1
Lane 2	0	285	0	285	0.4	470	0.607	100	26.1	LOS B	10.6	69.2	500	–	0.0	0.0
Lane 3	0	0	23	23	0.0	94[1]	0.246	100	32.6	LOS C	1.1	6.9	12	Turn Bay	0.0	0.0
Approach	633	285	23	941	0.1		0.694		15.6	LOS B	10.6	69.2				
Intersection				3148	0.2		1.000		26.2	LOS B	18.3	119.5				

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS E. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

0 Excess flow from back of an adjacent short lane
1 Reduced capacity due to a short lane effect
3 x = 1.00 due to short lane.
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

PHASING SUMMARY

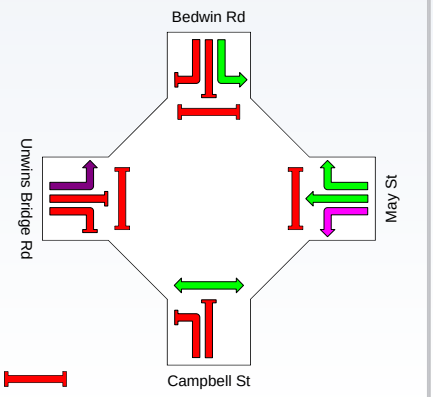
UNWINS BRIDGE RD, BEDWIN RD, MAY ST & CAMPBELL ST
THURSDAY EVENING PEAK, FUTURE TRAFFIC FLOWS
IMPROVEMENT SCHEME INTERSECTION OPERATION
Signals - Fixed Time Cycle Time = 70 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Degree of Saturation)**
Phase times determined by the program
Sequence: Westbound Lead
Input Sequence: A1, A, B, F
Output Sequence: A1, A, B, F

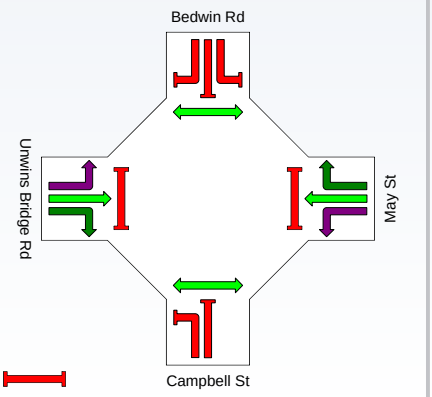
Phase Timing Results

Phase	A1	A	B	F
Green Time (sec)	6	17	16	7
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	12	23	22	13
Phase Split	17 %	33 %	31 %	19 %

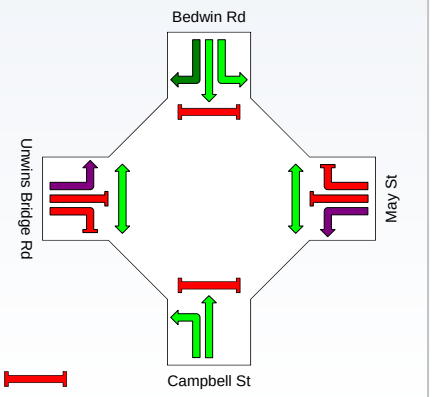
Phase A1



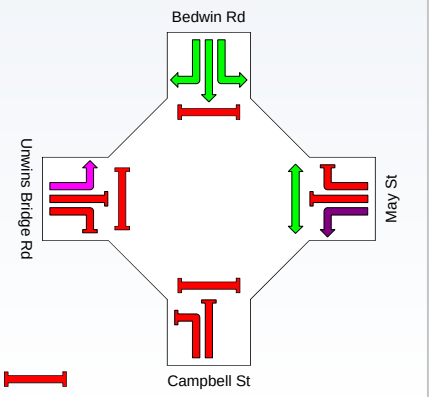
Phase A

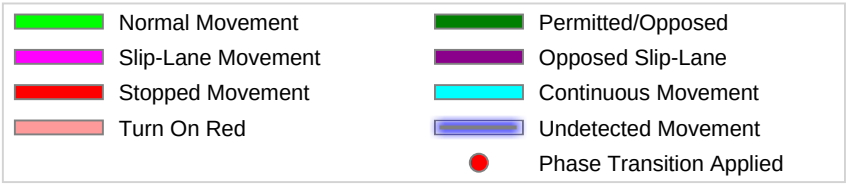


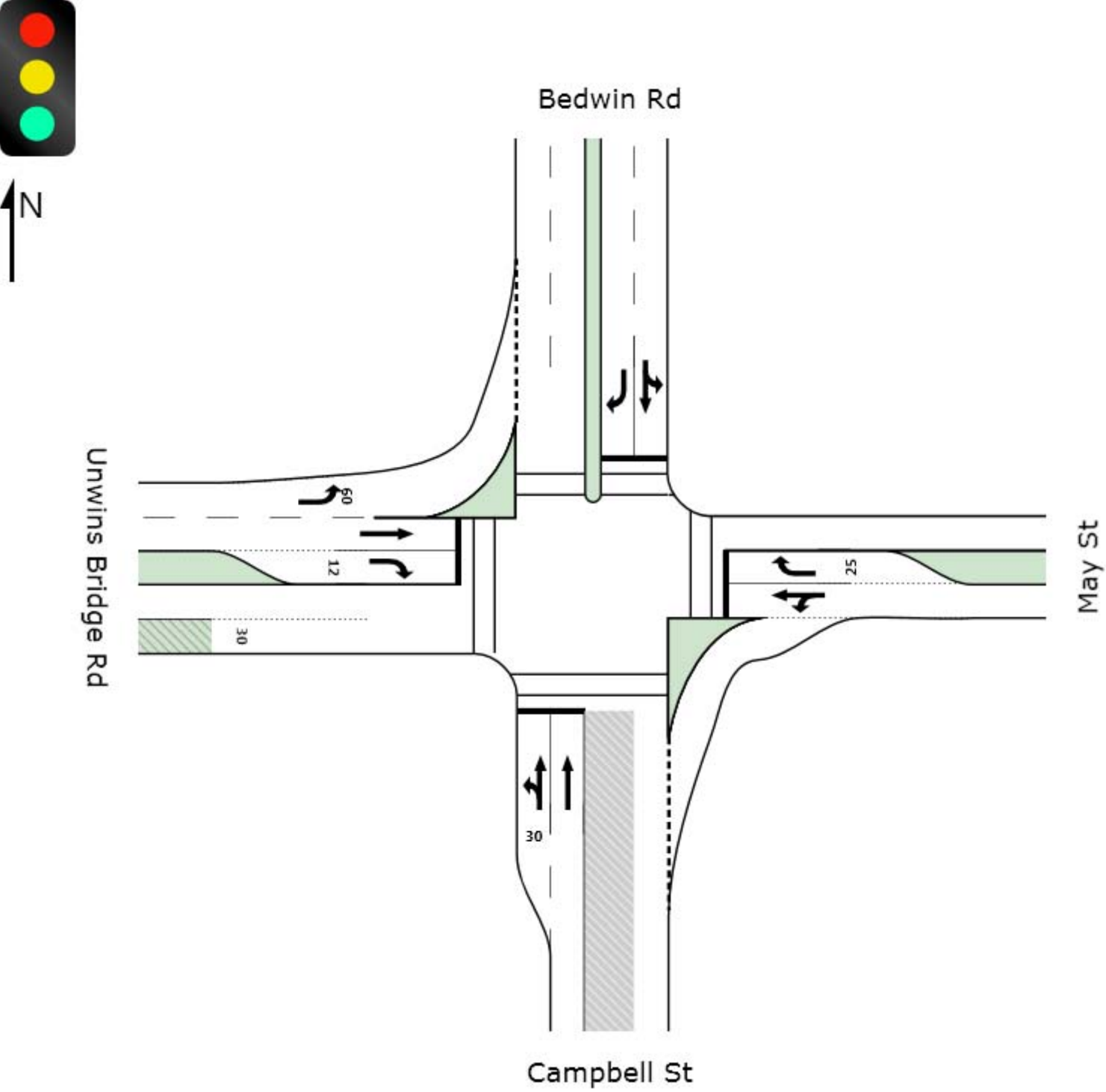
Phase B



Phase F






Bedwin Rd
N
Unwins Bridge Rd
May St
Campbell St
60
12
30
25
30

LANE SUMMARY

Site: SAT FUTURE, Imp. Scheme

UNWINS BRIDGE RD, BEDWIN RD, MAY ST & CAMPBELL ST
SATURDAY MIDDAY PEAK, FUTURE TRAFFIC FLOWS
IMPROVEMENT SCHEME INTERSECTION OPERATION
Signals - Fixed Time Cycle Time = 70 seconds

Lane Use and Performance

	Demand Flows L veh/h	T veh/h	R veh/h	Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Lane Length m	SL Type	Cap. Adj. %	Prob. Block. %
South: Campbell St																
Lane 1	33	21	0	53	0.7	243[1]	0.219	100	27.4	LOS B	2.2	14.4	30	Turn Bay	0.0	0.0
Lane 2	0	96	0	96	1.8	439	0.219	100	24.2	LOS B	3.9	25.8	500	–	0.0	0.0
Approach	33	117	0	149	1.4		0.219		25.3	LOS B	3.9	25.8				
East: May St																
Lane 1	26	295	0	321	0.0	822	0.391	100	17.8	LOS B	9.1	59.2	500	–	0.0	0.0
Lane 2	0	0	336	336	0.9	348	0.965	100	29.3[8]	LOS C[8]	10.1[8]	66.5[8]	25	Turn Bay	0.0	79.2
Approach	26	295	336	657	0.5		0.965		23.7	LOS B	10.1	66.5				
North: Bedwin Rd																
Lane 1	315	353	0	667	0.5	801	0.833	100	29.1	LOS C	24.2	158.1	500	–	0.0	0.0
Lane 2	0	0	441	441	0.0	446	0.988	100	73.0	LOS F	23.9	155.5	500	–	0.0	0.0
Approach	315	353	441	1108	0.3		0.988		46.6	LOS D	24.2	158.1				
West: Unwins Bridge Rd																
Lane 1	622	0	0	622	0.0	1026[1]	0.606	100	8.9	LOS A	7.4	48.2	60	Parking	0.0	0.3
Lane 2	0	281	0	281	0.4	470	0.598	100	26.0	LOS B	10.5	68.2	500	–	0.0	0.0
Lane 3	0	0	28	28	0.0	101[1]	0.282	100	29.6	LOS C	1.2	7.9	12	Turn Bay	0.0	0.0
Approach	622	281	28	932	0.1		0.606		14.7	LOS B	10.5	68.2				
Intersection				2846	0.3		0.988		29.7	LOS C	24.2	158.1				

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all lanes. LOS Method: Delay (RTA NSW).
Level of Service (Worst Lane): LOS F. LOS Method for individual lanes: Delay (RTA NSW).
Approach LOS values are based on average delay for all lanes.

1 Reduced capacity due to a short lane effect
8 Delay, queue length and stops for the short lane have been cut down to fit in the queuing space. You may wish to change the short lane to a full lane to investigate the effect on the adjacent lane performance.

PHASING SUMMARY

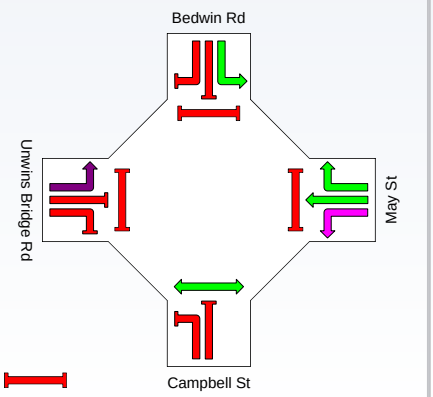
UNWINS BRIDGE RD, BEDWIN RD, MAY ST & CAMPBELL ST
SATURDAY MIDDAY PEAK, FUTURE TRAFFIC FLOWS
IMPROVEMENT SCHEME INTERSECTION OPERATION
Signals - Fixed Time Cycle Time = 70 seconds

Cycle Time Option: **Optimum Cycle Time (Minimum Degree of Saturation)**
Phase times determined by the program
Sequence: Westbound Lead
Input Sequence: A1, A, B, F
Output Sequence: A1, A, B, F

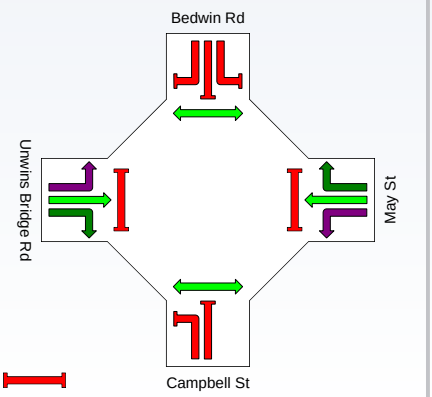
Phase Timing Results

Phase	A1	A	B	F
Green Time (sec)	7	17	16	6
Yellow Time (sec)	4	4	4	4
All-Red Time (sec)	2	2	2	2
Phase Time (sec)	13	23	22	12
Phase Split	19 %	33 %	31 %	17 %

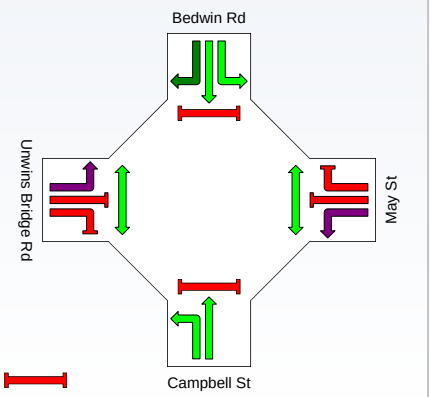
Phase A1



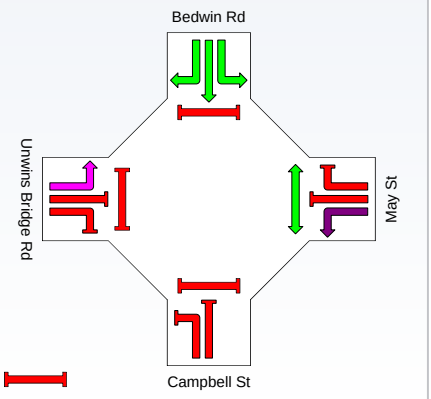
Phase A

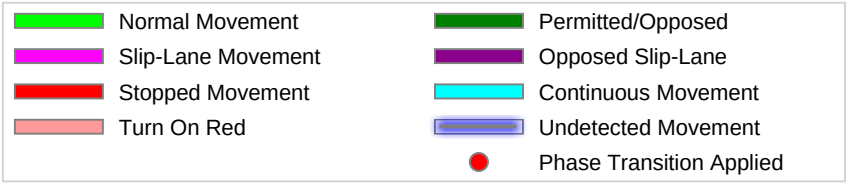


Phase B



Phase F





Appendix D Amended TMAP Figures

PROPOSED BUS MOVEMENTS

MARRICKVILLE METRO TMAP

North

Key

- Routes 308, 352
- Route 355
- B Bus Stop

Halcrow

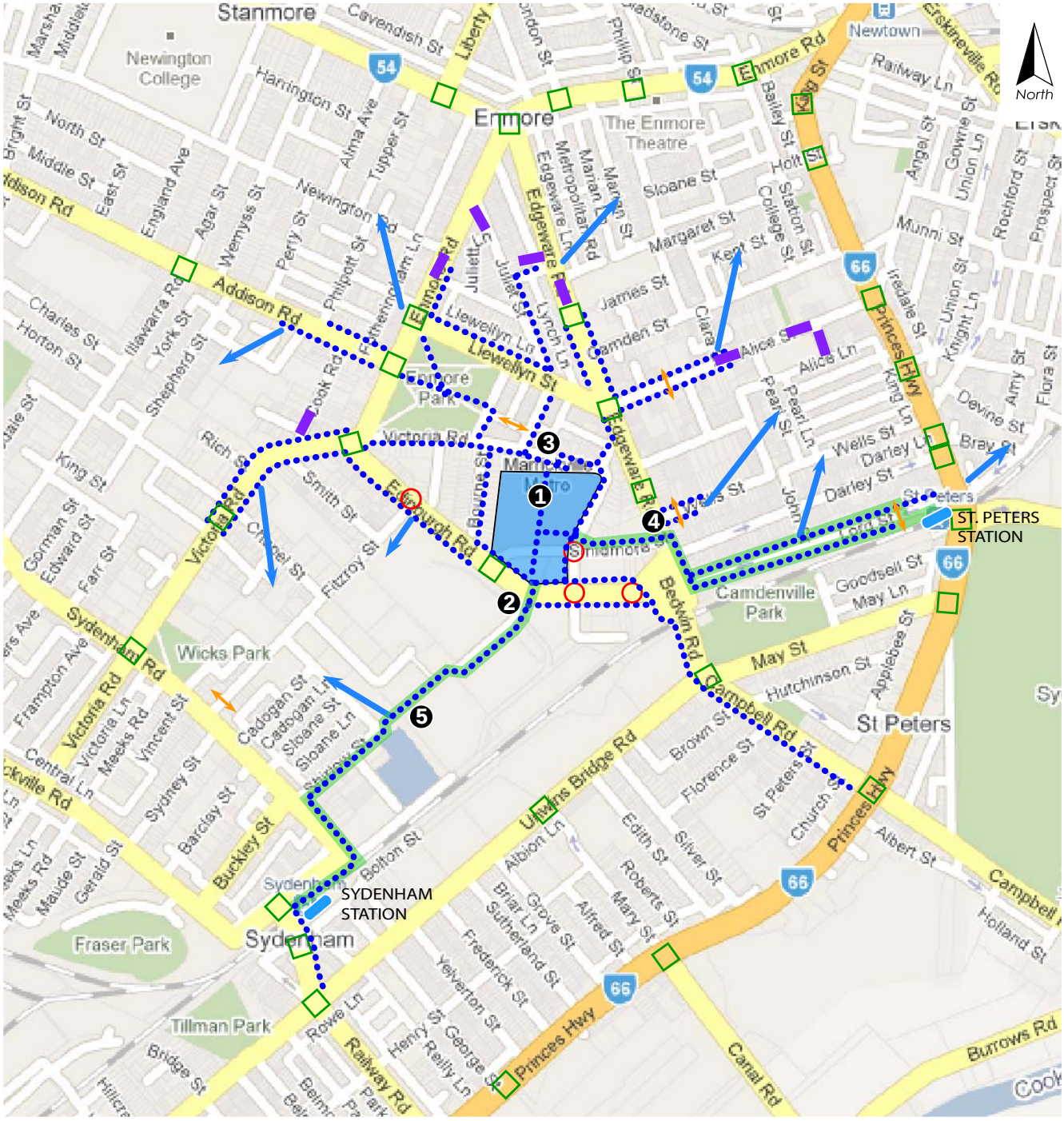
Figure 9

Filename: CTLRGWdi17.ai

Date: 5 November 2010

PROPOSED PEDESTRIAN ROUTE IMPROVEMENTS

MARRICKVILLE METRO TMAP



List of Improvements

1. New footpaths on site frontage, accessible entries/exits, new kerb ramps at immediate crossings.
2. New pedestrian crossing
3. Investigate improvements to remedy 'squeeze' point
4. Proposed pedestrian refuge in Edgeware Road at Smidmore Street
5. Improve intensity of lighting and security on pedestrian path

Key

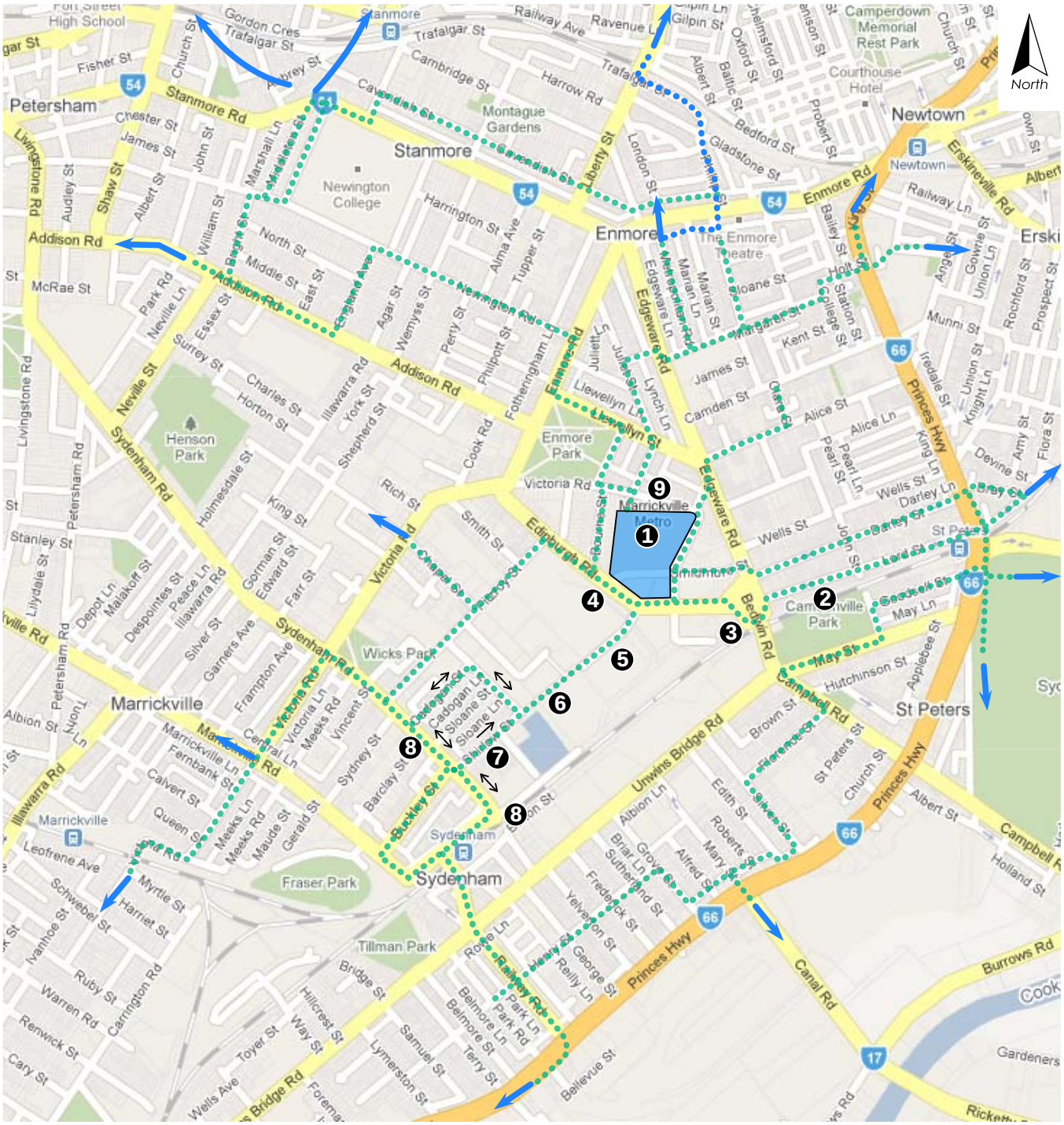
- Walking Route
- Connection to local area and street network
- Signals
- Roundabout
- Traffic Island/refuge
- Pedestrian Crossing
- Improved Pedestrian Routes to Stations
- Train Station

Halcrow

Figure 10

PROPOSED BICYCLE IMPROVEMENTS

MARRICKVILLE METRO TMAP



List of Improvements

1. Customer bicycle rails, staff bicycle parking enclosure
2. Marked bicycle symbols on street in Lord and Darley Streets
3. Marked bicycle symbols on street in Edgeware Road under Bedwin Road
4. Marked bicycle symbols on street in Edinburgh Road
5. Marked bicycle symbols on street in Sydney Steel Road
6. Lighting and signs for off street shared bicycle pedestrian path between Steel Road and Shirlow Street
7. Marked bicycle symbols on street (northbound)
8. Bicycle marking and signs for a two way shared bicycle-pedestrian footpath in Sydenham Road and Railway Parade
9. Marked bicycle symbols in Victoria Road to L7 and Juliet Street

Key

- Bicycle Routes Metro
- Connections to wider bicycle networks
- Proposed Regional Route 5 to Camperdown

Halcrow

Figure 11

Appendix E Correspondence to Authorities

Halcrow
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www.halcrow.com/australasia

NSW Roads and Traffic Authority
PO Box 973
Parramatta CBD
NSW 2124

10 November 2010

Attention: Mr James Hall

Re: Major Project MP 09_0191 – 34 Victoria Road (Marrickville Metro Shopping Centre) & 13 – 55 Edinburgh Road

Dear James,

I refer to your letter dated 20/09/10 to the Department of Planning and specifically the request for additional information made by the RTA within their letter. The objectives of this letter are twofold consisting of setting out the background to the project and how it has developed since the Environmental Assessment was lodged and providing the additional information requested by the RTA.

In July 2010 an Environmental Assessment (EA) was submitted to NSW Planning proposing the expansion of the Existing Marrickville Metro Shopping Centre. The proposal had two options, the first with a partial closure of Smidmore Street and the second with Smidmore Street remaining open. It was considered that the first option with Smidmore Street partially closed would have the greatest impact on local traffic conditions; therefore, Halcrow prepared a Traffic Management and Accessibility Plan (July 2010 TMAP) that covered this option. The TMAP was issued with the EA submission.

Since lodgement of the EA, Marrickville Council has decided not to sell Smidmore Street to AMP Capital Investors, so the alternative option with Smidmore Street left open to traffic is now proposed on its own. In addition, the size of the expansion has been reduced by about 22%. Consequently, we have a prepared a traffic report that assesses this proposal. This traffic report will be submitted as part of a Preferred Project Report (PPR) to NSW Planning in the near future.

The following summarises the key differences between the scheme that was assessed by the July 2010 TMAP and the current scheme with Smidmore Street remaining open:

- A reduction in the gross leasable floor space of the new development from 21,470sqm to 16,767sqm (a reduction of 22% in floor area);
- A reduction in the number of new car parking spaces from 715 to 528;

- Removal of the connection across Smidmore Street between the car park of the existing Marrickville site and the expansion site; and
- Smidmore Street is to remain open.

The additional information requested by the RTA in your letter of 20/09/10 can be summarised as follows:

1. Details regarding the methodology used to determine the trip distribution and route assignment; and
2. SIDRA files and a detailed Concept Plan for the proposed improvement scheme at the intersection of Bedwin Road with Unwins Bridge Road/May Street/Campbell Street.

In response to Point 1 above, we attach the technical sections of our traffic report on the amended scheme. Section 2.4 covers the methodology used to determine the trip distribution and route assignment. This has been extracted from the Preferred Project Report which, no doubt, the DoP will forward to you in full for comment.

The extract of our technical report includes a Concept Design Plan for the Bedwin Road intersection at Figure 5 of the report. For convenience, a scale, A3 plan is attached separately to this letter. This has been modified slightly to avoid the loss of parking adjacent to private dwelings on May Street.

Finally, with regard to Point 2, the relevant SIDRA Intersection file for the Bedwin Road with Unwins Bridge Road/May Street/Campbell Street intersection analysis will be issued electronically with this letter.

I trust the above and attached responds satisfactorily to the RTA's request for additional information. Should you have any queries, please do not hesitate to contact me.

Yours sincerely

Bruce Masson
Director Transport Planning

Cc Stella Qu – NSW Roads and Traffic Authority
Andrew Beattie – NSW Planning

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www.halcrow.com/australasia

NSW State Transit
PO Box 2557
Strawberry Hills
NSW 2012

10 November 2010

Attention: Mr Brian Mander

Re: Major Project MP 09_0191 – 34 Victoria Road (Marrickville Metro Shopping Centre) & 13 – 55 Edinburgh Road

Dear Brian,

I refer to your letter dated 16/08/10 to the Department of Planning and specifically the request for additional information made by the STA within their letter. The objectives of this letter are threefold consisting of setting out the background to the project and how it has developed since the Environmental Assessment was lodged, providing the additional information requested by the STA and finally, to begin the consultation process with the STA regarding the ability to provide extra bus services at Marrickville Metro.

In July 2010 an Environmental Assessment (EA) was submitted to NSW Planning proposing the expansion of the Existing Marrickville Metro Shopping Centre. The proposal had two options, the first with a partial closure of Smidmore Street and the second with Smidmore Street remaining open. It was considered that the first option with Smidmore Street partially closed would have the greatest impact on local traffic conditions; therefore, Halcrow prepared a Traffic Management and Accessibility Plan (July 2010 TMAP) that covered this option. The TMAP was issued with the EA submission.

Since lodgement of the EA, Marrickville Council has decided not to sell Smidmore Street to AMP Capital Investors, so the alternative option with Smidmore Street left open to traffic is now proposed on its own. In addition, the size of the expansion has been reduced by about 22%. Consequently, we have a prepared a traffic report that assesses this proposal. This traffic report will be submitted as part of a Preferred Project Report (PPR) to NSW Planning in the near future.

A new bus interchange on Edinburgh Road is still proposed as part of the alternative proposal. However, the following summarises the key differences (in terms of bus operations) between the scheme that was assessed by the July 2010 TMAP and the alternative proposal scheme:

- Smidmore Street is to remain open;
- Buses will continue to circulate the expansion site but in an anti-clockwise direction rather than in a clockwise direction; therefore, no bus U-turn movements are required;
- A slightly smaller roundabout is proposed for the new intersection of Edinburgh Road with Sydney Steel Street as this will not need to include bus U-turns; and
- Changes to the existing roundabout at the intersection of Edinburgh Road with Murray Street are no longer proposed.

In light of the scheme amendments listed above, the items on the list of additional information requested by the STA in their letter of 16/08/10 has reduced and can now be summarised as follows:

- Scale, engineering drawing of the Proposed New Bus Interchange on Edinburgh Road; and
- Scale, engineering drawing of the Proposed Roundabout Intersection of Edinburgh Road with Sydney Steel Street.

As requested, please find attached Cardno Drawings:

- 210026-SK-002a Rev.E – Edinburgh Road and Sydney Steel Road Roundabout; and
- 210026-SK-009 Rev.C – Edinburgh Road Bus Terminal.

PDF versions of these plans are attached along with other Cardno Drawings considered relevant for buses. CAD versions can be supplied if required.

In addition, we attach the technical sections of our traffic report on the amended scheme. This has been extracted from the Preferred Project Report which, no doubt, the DoP will forward to you in full for comment.

As a separate matter, the DoP has requested that we consult with STA on potential mechanisms for services in the area to be enhanced as demand increases when the centre is expanded. We thus request formal advice on how the STA responds to increased passenger needs in such circumstances.

We recognise that this is generally a matter for Transport NSW; therefore, we have copied this letter to David Hartmann of Transport NSW and request that TSNW respond with advice as to what is the accepted procedure for amplifying bus services.

Finally, it would be appreciated if you could respond acknowledging receipt of the attached plans and confirming that the STA considers the proposals satisfactory at this project application stage, recognising that the STA will have the opportunity for further input as the design progresses.

We look forward to your response to the above. Should you have any queries, please do not hesitate to contact me.

Yours sincerely

Bruce Masson
Director Transport Planning

Cc David Hartmann – Transport NSW
Andrew Beattie – NSW Planning

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Transport NSW
GPO Box 1620
Sydney
NSW 2001

10 November 2010

Attention: Mr David Hartmann

Re: Major Project MP 09_0191 – 34 Victoria Road (Marrickville Metro Shopping Centre) & 13 – 55 Edinburgh Road

Dear David,

In reviewing the Environmental Assessment for the Marrickville Metro expansion proposal, the NSW Department of Planning has requested that we consult with STA on potential mechanisms for enhancing bus services in the area as demand increases with the centre's expansion.

As requested, we have written to Brian Mander of the STA and a copy of our correspondence is attached to this letter.

However, we recognise that this is generally a matter for Transport NSW; therefore, it would be appreciated if you would provide us with formal advice on how the TNSW would respond to increased passenger needs in such circumstances.

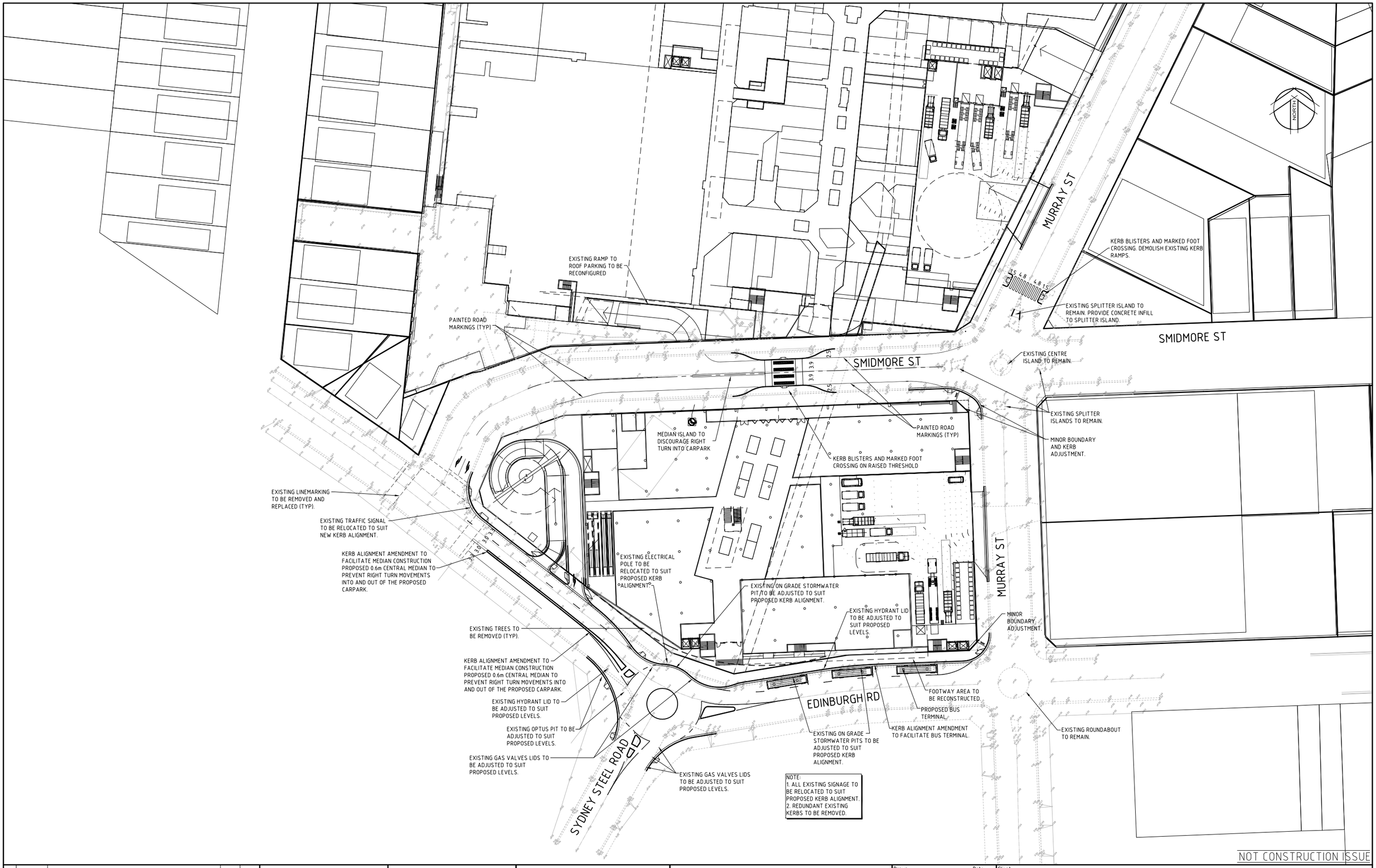
We look forward to receiving your response. Should you have any queries, please do not hesitate to contact me.

Yours sincerely

Bruce Masson
Director Transport Planning

Cc Andrew Beattie – NSW Planning

Appendix F Cardno Drawings



NOT CONSTRUCTION ISSUE

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B	08.11.10	ISSUE FOR APPROVALS	MKH	MKH
A	04.11.10	ISSUED FOR INFORMATION	PD	MKH

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ABN: 95 001 145 035
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Verified	MKH	Date 04.11.10
Approved	MKH	Date 04.11.10

Client: AMP Capital Investors Limited

Bovis Lend Lease
Marrickville Metro Shopping Centre

-GENERAL ARRANGEMENT PLAN

Status: FOR INFORMATION

Date	Datum	Scale	Size
OCT '10'	AHD	1:500	A1

Drawing Number: 210026-SK-000
Revision: B

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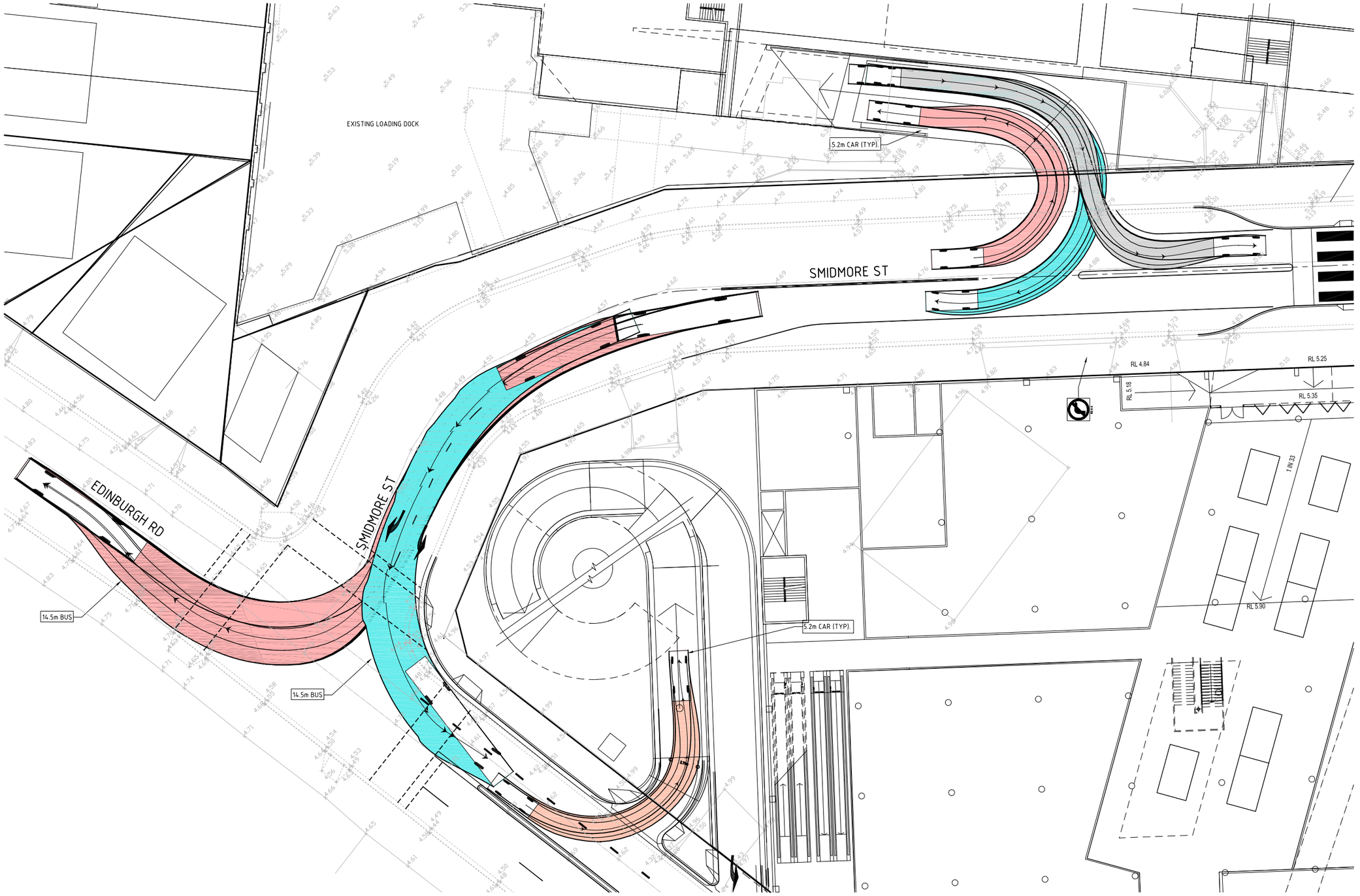
DATE PLOTTED: 8 November 2010 11:22 AM BY : MICHAEL HODGES (NORWEST)

XREFs: X-BHL_A1-Logo, CH4331C1_m, X210026-Siteworks, X-BHL-A1-SHT, EA006_m, 210026-TURNING PATHS

CAD FILE: G:\210026 - Marrickville Metro Shopping Centre\Drawings\Civil\DA\Sketches\210026-SK-001(E)-EDINBURGH ROAD AND SMIDMORE ST ENTRY AND EXIT.dwg



REFER TO SK002 FOR CONTINUATION

NOT CONSTRUCTION ISSUE

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C	25.10.10	UPDATED LAYOUT	RDM	MKH
B	18.10.10	UPDATED SITE LAYOUT	RDM	MKH
A	07.05.10	ISSUED FOR INFORMATION	PD	MKH

AMP capital INVESTORS

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Verified	MKH	Date 07.05.10
Approved	MKH	Date 07.05.10

Client: AMP Capital Investors Limited

Bovis Lend Lease
Marrickville Metro Shopping Centre

-EDINBURGH ROAD AND SMIDMORE ST ENTRY AND EXIT

Status: FOR INFORMATION

Date	Datum	Scale	Size
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Drawing Number: 210026-SK-001

Revision: E

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A	07.05.10	ISSUED FOR INFORMATION	PD	MKH

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Approved	MKH	Date 07.05.10

Client: AMP Capital Investors Limited

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Marrickville Metro Shopping Centre

-EDINBURGH ROAD AND SYDNEY STEEL ROAD ROUNDABOUT

Status: FOR INFORMATION

Date	Datum	Scale	Size
MAY '10'	AHD	1:200	A1

Drawing Number: 210026-SK-002a
Revision: E

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REFER TO SK001 FOR CONTINUATION

RL 5.30

19m SEMI TRAILER (TYP).

19m SEMI TRAILER (TYP).

MURRAY ST

EDINBURGH RD

SYDNEY STEEL ROAD

3000

NORTH

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Rev	Date	Description	Drawn	Appr.
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D	08.11.10	ISSUE FOR APPROVALS	MKH	MKH
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B	25.10.10	UPDATED SITE LAYOUT	RDM	MKH
A	18.10.10	UPDATED SITE LAYOUT	RDM	MKH

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Designed	RDM	Date 18.10.10
Verified	MKH	Date 07.05.10
Approved	MKH	Date 07.05.10

Client: AMP Capital Investors Limited

Bovis Lend Lease
Marrickville Metro Shopping Centre

-EDINBURGH ROAD AND SYDNEY STEEL ROAD ROUNDABOUT

Status: FOR INFORMATION

Date	Datum	Scale	Size
MAY '10'	AHD	1:200	A1

Drawing Number: 210026-SK-002b

Revision: D

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DATE PLOTTED: 8 November 2010 11:24 AM BY : MICHAEL HODGES (NORWEST)

XREF's X-BHL_A1-Logo; CH4331C1_m; X210026-Siteworks; X-BHL-A1-SHT; EA006_m; 210026-TURNING PATHS

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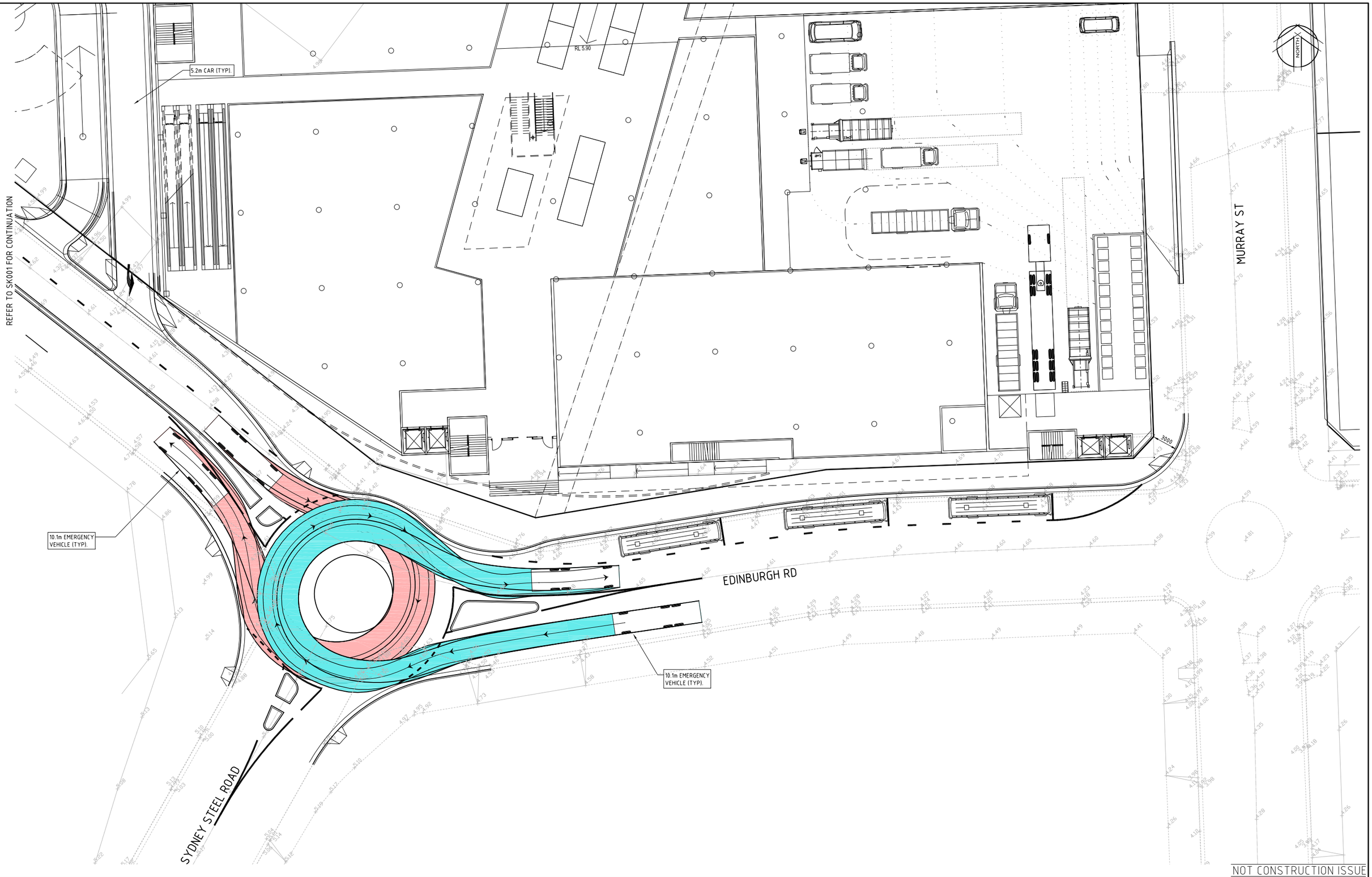

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A	18.10.10	UPDATED SITE LAYOUT	RDM	MKH

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Checked	MKH	18.10.10
Designed	RDM	18.10.10
Verified	MKH	07.05.10
Approved	MKH	07.05.10

Client: AMP Capital Investors Limited

Bovis Lend Lease
Marrickville Metro Shopping Centre

-EDINBURGH ROAD AND SYDNEY STEEL ROAD ROUNDABOUT

Status: FOR INFORMATION

Date	Datum	Scale	Size
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Drawing Number: 210026-SK-002c

Revision: D

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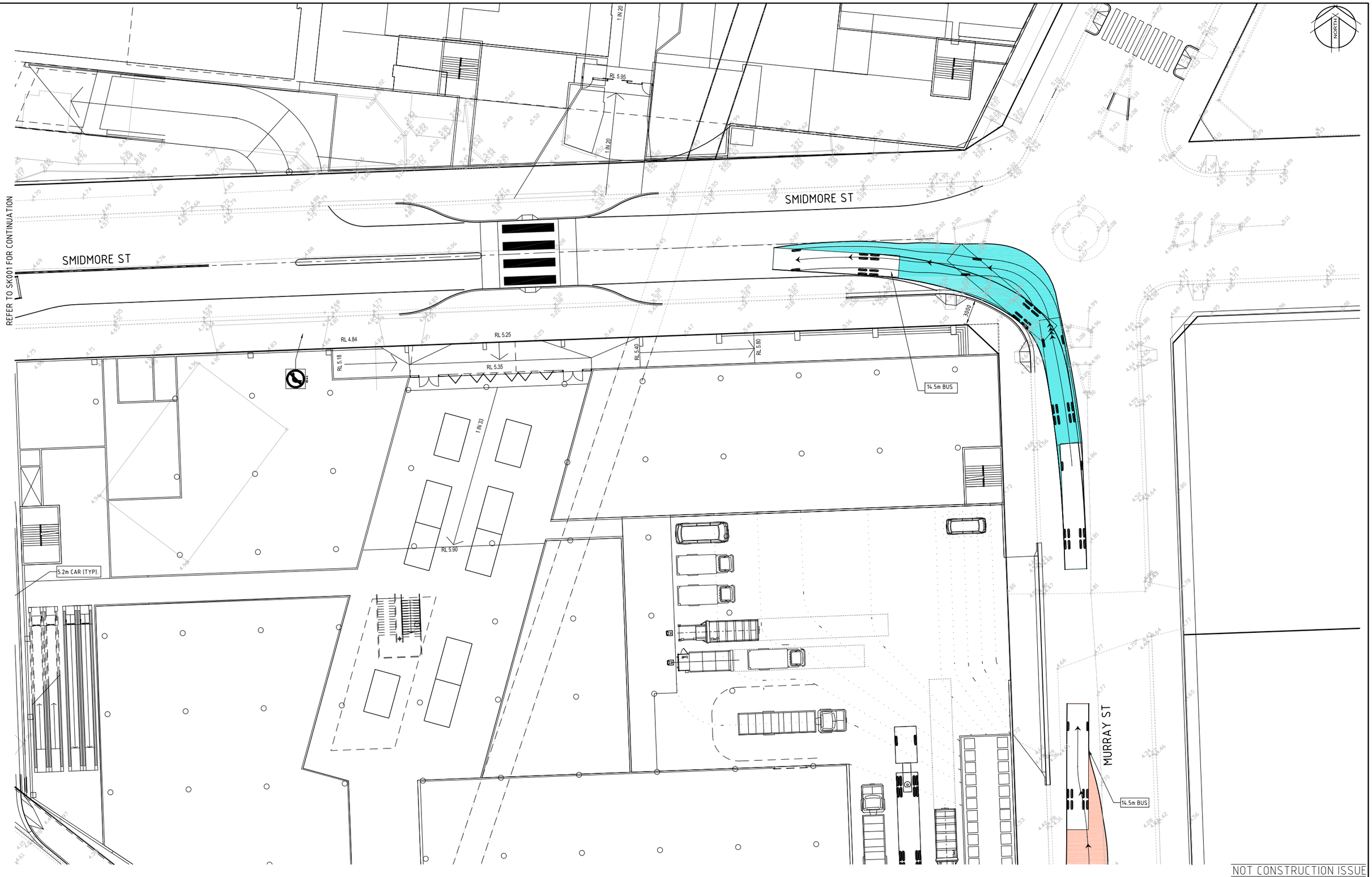

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Rev	Date	Description	Drawn	Appr.
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ABN: 95 001 145 035
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		Date
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Checked	MKH	18.10.10
Designed	RDM	18.10.10
Verified	MKH	07.05.10
Approved	MKH	07.05.10

Client: AMP Capital Investors Limited

Bovis Lend Lease
Marrickville Metro Shopping Centre
-SMIDMORE STREET ROUNDABOUT

Status: FOR INFORMATION

Date	Datum	Scale	Size
MAY '10'	AHD	1:200	A1

Drawing Number: 210026-SK-002d
Revision: A

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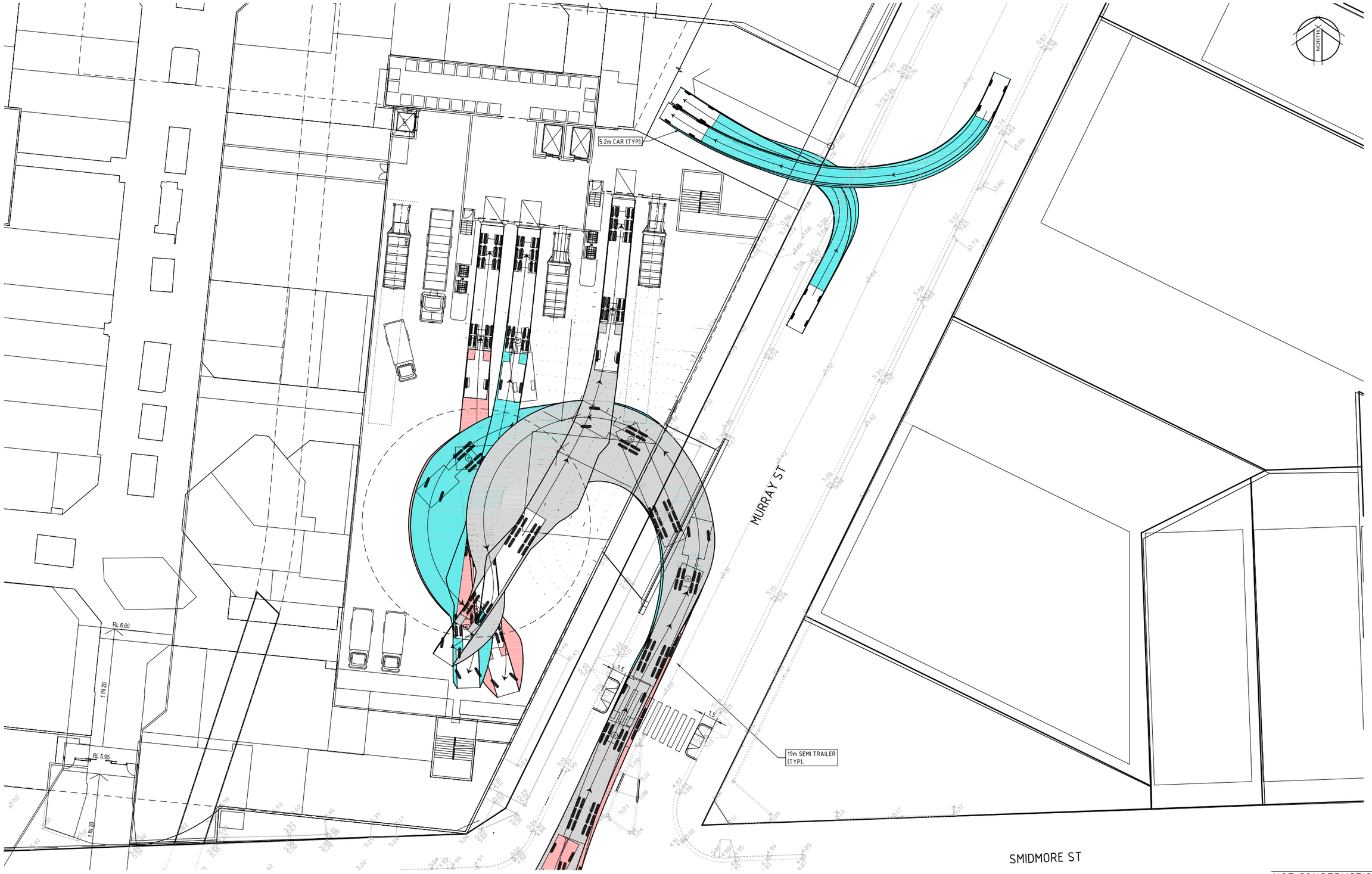

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		Date
Drawn	PD	07.05.10
Checked	MKH	07.05.10
Designed	PD	07.05.10
Verified	MKH	07.05.10
Approved	MKH	07.05.10

Client: AMP Capital Investors Limited

Bovis Lend Lease
Marrickville Metro Shopping Centre

-MURRAY STREET AND SMIDMORE STREET INTERSECTION - IN

Status: FOR INFORMATION

Date	Datum	Scale	Size
MAY '10'	AHD	NTS	A1

Drawing Number: 210026-SK-004a
Revision: E

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NOT CONSTRUCTION ISSUE

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B	25.10.10	UPDATED SITE LAYOUT	RDM	MKH
A	15.10.10	ISSUED FOR INFORMATION	RDM	MKH

AMP capital INVESTORS

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Quality Endorsed Company
AS 9001 Lic. 5960 Standards Australia

Drawn	RDM	Date 15.10.10
Checked	MKH	Date 15.10.10
Designed	RDM	Date 15.10.10
Verified	MKH	Date 15.10.10
Approved	MKH	Date 15.10.10

Client: AMP Capital Investors Limited

Bovis Lend Lease
Marrickville Metro Shopping Centre

-MURRAY STREET AND SMIDMORE STREET INTERSECTION - OUT

Status: FOR INFORMATION

Date	Datum	Scale	Size
MAY '10'	AHD	NTS	A1

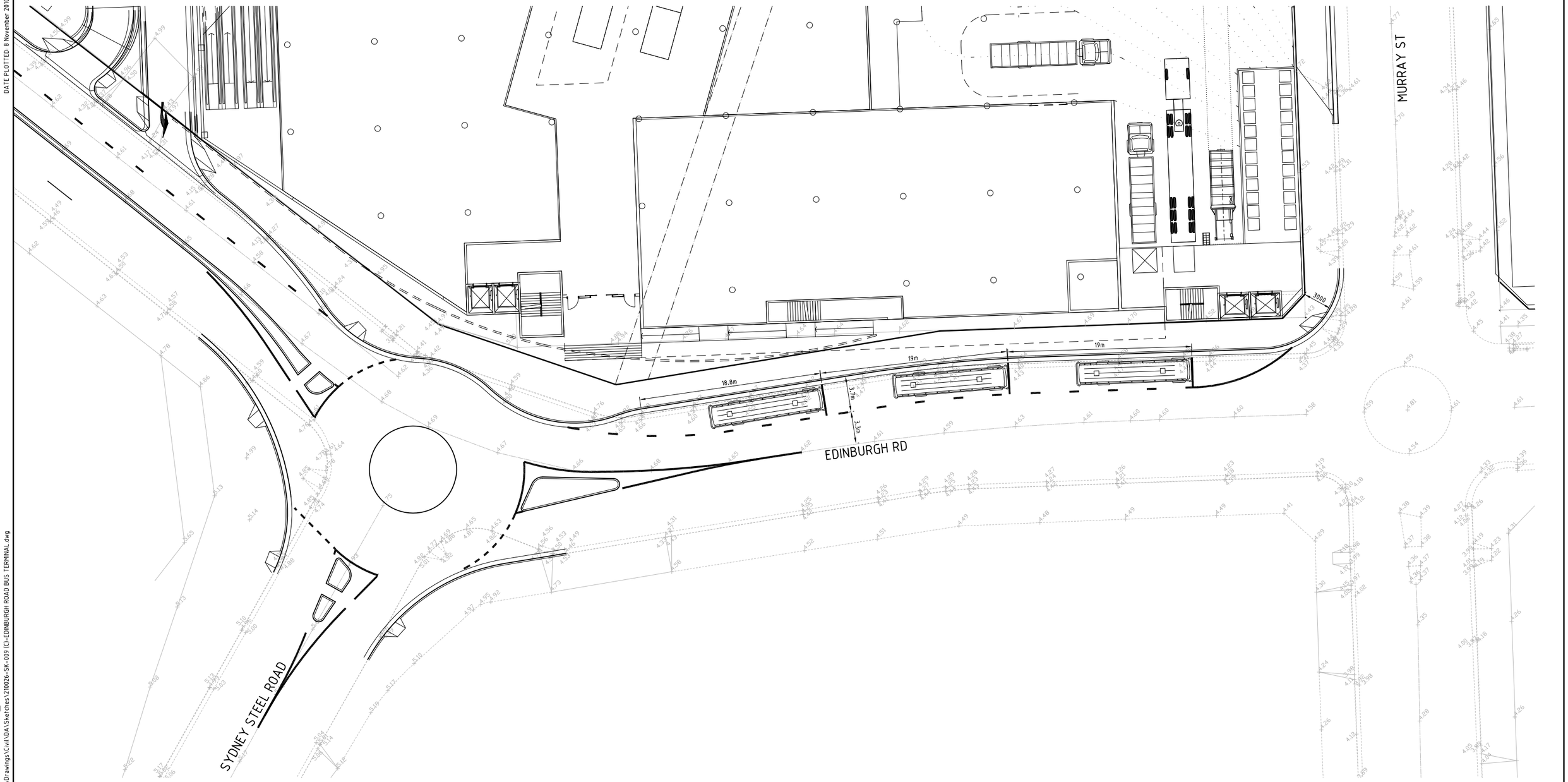
Drawing Number: 210026-SK-004b
Revision: D

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm ON A1 ORIGINAL

DATE PLOTTED: 8 November 2010 11:25 AM BY : MICHAEL HODGES (NORWEST)

XREFs: X-BHL-A1-Logo; CH433TC1_m; X210026-Siteworks; X-BHL-A1-SHT; EA006_m; 210026-TURNING PATHS

CAD FILE: G:\210026 - Marrickville Metro Shopping Centre\Drawings\Civil\DA\Sketches\210026-SK-009 (C)-EDINBURGH ROAD BUS TERMINAL.dwg



NOT CONSTRUCTION ISSUE

Rev	Date	Description	Drawn	Appr.
C	08.11.10	ISSUE FOR APPROVALS	MKH	MKH
B	04.11.10	REVISED ARCHITECTURAL	RDM	MKH
A	25.10.10	ISSUED FOR INFORMATION	RDM	MKH

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Drawn	RDM	Date 21.10.10
Checked	MKH	Date 21.10.10
Designed	RDM	Date 21.10.10
Verified	MKH	Date 21.10.10
Approved	MKH	Date 21.10.10

Client: AMP Capital Investors Limited

Bovis Lend Lease
Marrickville Metro Shopping Centre

-EDINBURGH ROAD BUS TERMINAL

Status: FOR INFORMATION

Date	Datum	Scale	Size
OCT '10'	AHD	1:200	A1

Drawing Number: 210026-SK-009
Revision: C

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm ON A1 ORIGINAL